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BURMEISTER'S TYPES OF ODONATA.

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(With Plate I.)

ORIGIN OF THE PRESENT PAPER.

In brief "Preliminary Notes on some African Odonata" published in volume xix, of these TRANSACTIONS, June, 1892, I made the remark, "The two species of *Orthetrum* here described as new may possibly be among the species already described by Burmeister or Rambur, but from their descriptions I could not satisfactorily identify them." And, in connection with the fuller descriptions of the same two *Orthetra*, contained in the Proceedings of the United States National Museum, volume xviii, the hope was expressed (p. 130) "that the present descriptions and figures will sufficiently characterize the species in question, so that those having access to types of previously described species may perceive the identity, if it exist."

If any one had perceived the identity, no published statement of the fact had appeared up to the Winter of 1895-'96, at which time I was studying in the University at Berlin. Dr. (and now Professor) Ferdinand Karsch, the well-known entomologist, of the Museum für Naturkunde in that city, then told me of the existence of some, at least, of Burmeister's types of Odonata in the Zoological Institute at Halle. Dr. Karsch had also experienced the difficulty of satisfactorily identifying African species of *Orthetrum* described by various authors. I was then planning to spend the Summer semester of 1896 at Jena, and when I suggested to Dr. Karsch that the short distance thence to Halle, might enable me to spend the Pfingsten, or Whitsuntide, week of holidays in an examination of such Burmeisterian *Orthetra* as might yet exist in the latter place, he was pleased to approve of the suggestion.

Accordingly, having first obtained the permission of the late Prof. Ernst Ludwig Taschenberg, then Professor of Entomology, I spent

* Researches made in the Zoologisches Institut of the Vereinigte Friedrichs-Universität Halle-Wittenberg, at Halle, Germany, and in the Museum of Comparative Zoology, Cambridge, Massachusetts.

the greater part of five days, May 26 to 30, 1896, in Halle, in studying the collection of Odonata there. The idea was then formed of listing and studying, as far as possible, all Burmeisterian types of Odonata, whether of *Orthetrum* or other genera. A brief statement of the results appeared in "Entomological News," volume viii, page 6, January, 1897.

But by no means all of Burmeister's Odonata exist in Halle. Correspondence developed the fact that other types, which had passed into the possession of the late Dr. H. A. Hagen, were to be found in the Museum of Comparative Zoology at Cambridge, Massachusetts. These were rendered accessible to study by the kindness of Mr. Samuel Henshaw, Curator for Insects, and a considerable part of a visit to Cambridge made between July 15 and August 4, 1897, was employed in examination of them.

THE AIM OF THIS PAPER

is therefore to give as complete a list as possible of the present locations of Burmeister's types of Odonata, together with detailed descriptions of those species whose identity is more or less uncertain. These cases are mostly of the subfamily Libellulinae, for in the other subfamilies most of Burmeister's species have been studied by Dr. Hagen or Baron de Selys-Longchamps, and their results recorded. Citations of these records are given in the following pages under the respective species.

BURMEISTER'S WORK ON THE ODONATA, AND THE SOURCES OF HIS MATERIAL.

Karl Hermann Conrad Burmeister, born in Stralsund, Jan. 15, 1807, died in Buenos Aires, May 2, 1892,* published but one work on the Odonata, and this is contained in pages 805-862 of the second

* The most extensive biographical notice is by Dr. Carlos Berg, in Spanish, in the *Anales del Museo Nacional de Buenos Aires*, vol. iv, pp. 315-357, 1895; it contains also a chronological list of his publications on all subjects. Dr. Berg gives a shorter "Notice Necrologique," in French, in *Annales, Soc. Entom. France*, lxiii, pp. 705-712, with a list of Burmeister's entomological works; both of these are accompanied by a portrait, and both are to a large extent based on Dr. O. Taschenberg's biography in *Leopoldina* xxix, pp. 43, 62, 78, 94. Halle, 1893. Shorter sketches are to be found in *Entom. Monthly Magazine*, London, xxviii, pp. 221-22, August, 1892, by R. McLachlan, and in *Entomologische Nachrichten*, Berlin, xviii, pp. 220-222, July, 1892 (anonymous). In the *Anales Soc. Cientif. Argentina*, xxxiii, pp. 145-150, is an account of the "Exequias funebres del Doctor German Burmeister," consisting chiefly of a "Discurso del Ministro de Instruccion Publica, Dr. Juan Balestra."

volume of his monumental "Handbuch der Entomologie," Berlin, 1839, T. C. F. Enslin. The systematic portion, which alone concerns us here, comprises 171 species, grouped under six genera, as follows: *Agrion* 32 species, *Calopteryx* 17, *Diastatomma* 10 (one not numbered), *Aeschna* 20, *Epophthalmia* 9, *Libellula* 83 (two not numbered). Of these the following numbers were described for the first time: *Agrion* 19, *Calopteryx* 8, *Diastatomma* 2, *Aeschna* 12, *Epophthalmia* 6, *Libellula* 48.

In the "Vorrede" to this second volume, page iv, in promising a continuation of the work, Burmeister says "auch wird, wie bisher, im Werke selbst jeder Geber namentlich bei jeder Art aufgeführt werden." "Wie bisher" applies especially to the Odonata, for the description of almost every extra-European species is followed by the name of the collection in which Burmeister found the types which he employed. This has added greatly to the ease of locating and identifying his types. The sources of his material, then, which he mentions are the collections of M. C. Sommer in Altona, W. v. Winthem in Hamburg, Prof. Germar in Halle, Graf v. Hoffmannsegg in Dresden, and of the University at Halle comprising species from Europe, from South Africa by Drège, and from Hindustan by King through the missionary Schmidt.

M. C. Sommer, described in Hagen's *Bibliotheca Entomologica* as "Banquier in Altona," was Burmeister's father-in-law (O. Taschenberg *l. c.* p. 44; Berg *l. c.* p. 317; Hagen, *Psyche*, v, p. 369, July, 1890). His death, "in der letzten Zeit," is barely mentioned in *Stettiner Entom. Zeitung*, xxix, p. 219, for April-June, 1868. I have not found any published notice of the fate of his Neuroptera, but some are in Cambridge, some in Vienna.

A "Nekrolog" of Wilhelm v. Winthem (1799-Sept. 2, 1847) is given by Dr. J. Steetz in *Stett. Ent. Zeit.* ix, pp. 194-198, July, 1848. Hagen, *Biblioth. Entom.* ii, p. 292, says of his collection "die Neuropteren besitzt H. Hagen."

Hagen, *l. c.* i, p. 273, says that Prof. Ernst Friedrich Germar's "Sammlung und Bibliothek sind in Prof. Schaums Besitz übergegangen." Hermann Rudolph Schaum was Germar's nephew and published a biography of his uncle in *Stett. Ent. Zeit.* 1853, pp. 375-390. Germar's Neuroptera, however, have become somewhat scattered, in Halle and in Cambridge.

Of Johann Centurius, Graf von Hoffmannsegg (spelled with one or two "n"s) (Aug. 23, 1766-Dec. 13, 1849) Hagen states *l. c.* i, p. 374, "Seine Leben von H. Lichtenstein im Dresdener Album von Elfriede von Muehlenfels. Berlin. 1856. 8. p. 24-44. . . . Seine Sammlung bildet den Schatz des Berliner Museums." On his collection see also *Entom. News* vii, p. 132, May, 1896. His Odonata which Burmeister employed seem to have remained in Halle, however.

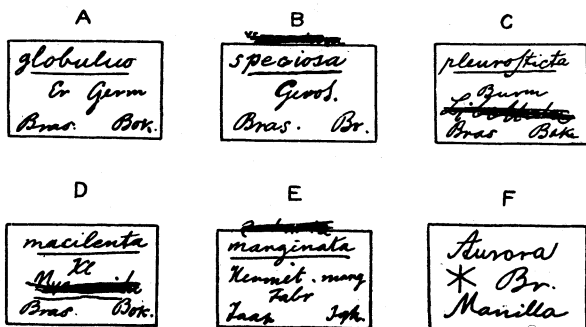
Of Drège I have found only one note. In Baron de Selys and Hagen's *Mono-graphie des Calopterygines*, p. 231, under *Libellago caligata* is this: "Synon. *Libellula* nov. sp. No. 1520, Catalogue des insectes recueillis par C. Fr. Drège dans

l'Afrique meridionale (redigé par Erichson), Hamburg 1841." On p. 233, *l. c.* the name is spelled Drégé. Burmeister's types from this collection are in Halle, but other Odonata from Drège are in Berlin, Baron de Selys' collection at Liege, and at Cambridge. I know nothing further of King's or Schmidt's Odonata than that they are in Halle.

PRESENT LOCATIONS OF BURMEISTER'S TYPES.

I. ZOOLOGISCHES INSTITUT, HALLE.

The Odonata were found by me to be, for the most part without pin-labels, and standing below written labels pinned to the bottoms of the drawers containing the collection. These "drawer-labels" are colored, according to a scheme to show geographical distribution, as follows: white Europe, yellow Asia and adjoining islands, blue Africa, lilac or purple Australia, pink North America, green South America and Mexico. The hand-writing of these labels, Prof. Taschenberg told me, was Burmeister's own, and he further assured me that the collection had not been altered from the condition in



EXPLANATION OF FIGURES.

A-E, fac-similes of drawer-labels from the Zoological Institute, Halle, in Burmeister's handwriting. F, fac-simile of a label from a Winthem type in the Museum of Comparative Zoology, Cambridge.

which Burmeister left it. Each label has a single black-line border which measures 20 x 13 millimeters. Such labels are represented in the accompanying figures A-E, which have been produced by tracing some original labels and photographing these tracings, as experiment showed that the paleness of the ink and the color of the labels prevented the obtaining of good results by direct photography. For the labels in question I am also indebted to the late Prof. Taschenberg, who, in transmitting them, wrote, under date of 14. 9. 97, "erlaube ich mir Ihnen einige Etiquetten zu *schenken* an denen

Sie die Handschrift gut kennen lernen ; dieselben stāmen aus unserer Sammlung u. sind dadurch überflüssig geworden, weil B. die sie benennenden Unica bei seinem Scheiden von hier mit nach Cordova genōmen hat. Ich will noch bemerken dass Burmeister nur mit Gänsekielen schrieb u. die Feder stets in der Tintenfasce stecken liess, in Folge dessen sie immer sehr weich war."

Similar labels exist on some of Burmeister's types at Cambridge, *e. g.* that of *Agrion saucium*, and the reproductions here given are mainly for the purpose of aiding others in the recognition of types which I have not found, if such are still in existence.

A few labels of similar style and handwriting exist at Halle for species subsequently described by Charpentier, Rambur and Hagen.

The Burmeister species do not stand in the drawers in the order in which they are numbered in the Handbuch. All specimens, with the exception of a few with pin-labels of evidently much later date and other handwriting, were left by me in the same positions and under the same labels as I found them. Upon such specimens as, after study, I believed to be Burmeister's actual types, I placed the following written pin-label, "Considered by me as Burmeister's type of his [here the name of the species] P. P. Calvert, May, 1896." In the following pages such specimens are indicated by (T). The specimens as I found them, were for the most part in good condition.

The following species of Burmeister's Handbuch are now at Halle. The new species in the lists are marked with an asterisk.*

(a) From Sommer's collection.

<i>Agrion</i> 3. <i>amalia</i> *	<i>Libellula</i> 40. <i>domitia</i>
<i>Calopteryx</i> 5. <i>caja</i> ?	" 41. <i>pulla</i> * [lows 56]
" 11. <i>chinensis</i>	" <i>sabina</i> (no number, fol-
<i>Libellula</i> 11. <i>lateralis</i> *	" 75. <i>semivitre</i> *
" 36. <i>dimidiata</i>	

(b) From Germar's collection.

<i>Agrion</i> 27. <i>phallatum</i>	<i>Libellula</i> 6. <i>hæmatodes</i> * ?
<i>Aeschna</i> 2. <i>4-guttata</i> *	" 12. <i>longipennis</i> *

* The following "Anmerk." is from page v, of vol. ii, of the Handbuch : "Der Stern (*) im Text hinter einer Familie, Gattung oder Art, bedeutet so viel als mihi oder nobis, und zeigt an, dass die Gruppe von mir unter diesem Namen zuerst aufgestellt worden ist." This explains the presence of the * on many of the written labels quoted later.

(c) From v. Winthem's collection (although not cited as such in the Handbuch).

Libellula 16. *pedemontana*
 " 48. *umbrata*
 " 49. *ruralis**

Libellula 50. *plebeja**
 " 51. *discolor**

(d) From Drège's collection (small bits of unmarked blue paper as pin-labels).

Agrion 17. *glaucum**
 " 18. *glabrum**
 " 20. *cafferum**
 " 24. *fasciatum**
 " 25. *tessellatum**
 " 26. *longicaudum**
 " 29. *plagiatum**

Agrion 30. *virgatum**
Calopteryx 9. *iridipennis**
Libellula 8. *leucosticta**
 " 13. *stictica**
 " 14. *arteriosa**
 " 52. *caffa**
 " 74. *marginata*

(e) From Hoffmannsegg's collection.

Agrion 19. *pruinatum**?
Calopteryx 12. *luctuosa**
Diastatomma *decorata** (no number,
 follows No. 1)
Diastatomma 2. *parallelogramma**
Aeschna 14. *guttata**
 " 16. *jaspidea** [lows 16)
Libellula *trivirgata** (no number, fol-

Libellula 22. *Tillarga*
 " 23. *analisis**
 " 28. *Phyllis*
 " 33. *fluctuans*
 " 42. *equestris* (*feralis*)
 " 59. *leptura**
 " 62. *ferruginea*
 " 63. *pruinosa**

(f) From King's collection.

Aeschna 15. *ephippiger**
Epophthalmia 1. *vittata**
Libellula 23. *analisis**
 " 27. *chinensis*.
 " 29. *murcia*

Libellula 31. *indica*
 " 42. *equestris*
 " 60. *sanguinea**
 " 67. *contaminata*

(g) From Zimmermann (not always mentioned in the Handbuch, but on the labels).

Agrion 8. *discolor**
 " 10. *saucium**
Aeschna 2. *4-guttata**
Epophthalmia 2. *cinnamomea**

Libellula 78. *trimaculata*
 " 80. *semifasciata**
 " 81. *bifasciata*

(h) From Thorey, of Hamburg.

Calopteryx 6. *Brightwelli*.

(i) Collector not mentioned.

Agrion 2. *tullia**
 " 9. *denticolle**
 " 11. *tuberculatum*
 " 12. *pumilio*
 " 13. *hastulatum*
 " 14. *interruptum*
 " 15. *furcatum*
 " 21. *minium*

Agrion 22. *chloridium*
 " 23. *lacteum*
 " 28. *cingulatum**
 " 31. *barbarum*
 " 32. *forcipula*
Calopteryx 14. *virgo*
 " 15. *parthenias*
Diastatomma 5. *serpentina*

<i>Diastatomma</i> 6. <i>flavipes</i>	<i>Libellula</i> 17. <i>vulgata</i>
" 7. <i>forcipata</i>	" 18. <i>flaveola</i>
" 9. <i>gigantea</i>	" 19. <i>albifrons</i> *
<i>Aeschna</i> 7. <i>grandis</i>	" 20. <i>nigra</i>
" 8. <i>chrysophthalma</i>	" 21. <i>pectoralis</i>
" 9. <i>juncea</i>	" 54. <i>vesiculosa</i>
" 10. <i>mizta</i>	" 69. <i>cærulescens</i>
" 13. <i>azurea (imperator)</i>	" 70. <i>cancellata</i>
<i>Epophthalmia</i> 4. <i>flavo-maculata</i>	" 71. <i>conspurcata</i>
" 5. <i>metallica</i>	" 72. <i>depressa</i>
" 6. <i>ænea</i>	" 79. <i>quadrimaculata</i>

Of the European species contained in this list it should be said that room for doubt exists as to their being in all cases types of the Handbuch. Some subsequent additions have undoubtedly been made to the collection at Halle and can be detected as such. It is quite possible that some others exist which cannot be so distinguished.

II. MUSEUM OF COMPARATIVE ZOOLOGY, CAMBRIDGE.

The greater part of the Burmeister types here are from Winthem's collection, acquired by Hagen previous to 1861. All such specimens have a printed pin-label "Winthem," and usually also a white, written pin-label, with a single black-line border measuring 20 x 14 millimeters. A fac-simile of such is given in figure F, page 30, reproduced in the same way as the others; the hand-writing is unknown to Mr. Henshaw or myself. There are also some types from Sommer's and Germar's collections, indicated by written pin-labels, often in Hagen's hand-writing. Hagen's own copy of the second volume of the Handbuch, in the Museum library, has the following written on the front fly-leaf, "Dr. H. Hagen. Koenigsberg 1840. Die unterstrichenen Arten sind in meinem Samlung, die * alt Typen." Although this refers to Hagen's practice of placing a line under the number of each species, as given by Burmeister, which he possessed, and a star in front of the numbers of those species of which he possessed Burmeister's types, yet in some cases, mentioned subsequently, although Hagen's copy has both * —, a careful search in the collection has failed to reveal any Burmeister specimens.

The list of types follows; as before, the * denotes new species described by Burmeister.

(a) From v. Winthem's collection.

<i>Agrion</i> 7. <i>fumipenne</i> *	<i>Calopteryx</i> 10. <i>auripennis</i> *
<i>Calopteryx</i> 1. <i>lineata</i> *	" 13. <i>holosericea</i> *
" 2. <i>fenestrata</i> *	" 16. <i>dimidiata</i> *
" 7. <i>tricolor</i> *	" 17. <i>maculata</i>
" 8. <i>apicalis</i> *	<i>Epophthalmia</i> 7. <i>lateralis</i> *

Epophthalmia 9. *gracilis***Libellula* 1. *venosa**" 2. *pulchella**" 3. *pleurosticta**" 4. *hemichlora**" 7. *histrion**" 8. *leucosticta**" 9. *imbuta**" 10. *fastigiata**" 35. *obscura*." 38. *ochracea**" 39. *castanea**" 47. *tripartita***Libellula* 48. *umbrata*" 53. *polysticta**" 54. *vesiculosa* [lows 56]" *sabina* (no number, fol-" 57. *stemmales**" 58. *chrysostigma**" 59. *leptura**" 61. *semiaquea**" 64. *testacea**" 65. *aurora**" 66. *sanguinolenta**" 77. *auripennis**" 78. *trimaculata*

(b) From Sommer's collection.

Agrion 5. *dorsale**" 6. *croceum**" 20. *cafferum***Calopteryx* 13. *holosericea***Aeschna* 4. *luteipennis**" 11. *septentrionalis***Epophthalmia* 8. *albicincta***Libellula* 44. *connata**

(c) From Germar's collection.

Agrion 10. *saucium**" 12. *pumilio*" 16. *heterostictum**" 28. *cingulatum***Calopteryx* 4. *americana**Aeschna* 18. *junia**Epophthalmia* 3. *eustalucta***Libellula* 16. *pedemontana*" 19. *albifrons**" 20. *nigra*" 22. *Tillarga*" 23. *analisis**" 69. *cærulescens*

III. K. K. NATURHISTORISCHES HofMUSEUM, VIENNA.

When in Vienna, in March, 1896, the idea of studying *all* of Burmeister's types had not been formed, and I did not then know that any of his types were there. A few notes on some *Orthettra* were made, however, but the fact that two *O. sabina* Burm. (not Drury) were labeled "Coll. Somer 1870", but without any indication that they were types, was forgotten by me until about the time that the printing of this paper was commenced. An inquiry directed to Prof. Dr. Kraepelin, Director of the Natural History Museum at Hamburg, as to the existence there of the types not to be found at Halle and at Cambridge had suggested applying to Hofrat Brunner von Wattenwyl in Vienna. Hofrat Brunner, who purchased the Orthoptera and the Odonata of Sommer's collection, replied that he had given the latter to the Hofmuseum. Prof. Dr. Brauer has promised to send a list of Burmeister's types contained in this collection, which list I hope to be able to reproduce in the closing pages of this paper.

Of the following species I have not studied the types, some of which are in Vienna, as above explained.

(a) From Sommer's collection.

<i>Agrion</i> 1. <i>lucretia</i>	<i>Libellula</i> 25. <i>basalis</i> *
" 4. <i>macrurum</i> *	" 26. <i>carolina</i>
<i>Diastatomma</i> 1. <i>clavata</i>	" 34. <i>pullata</i> *
" 4. <i>campanulata</i> *	" 37. <i>fasciata</i>
<i>Aeschna</i> 3. <i>costalis</i> *	" 43. <i>unimaculata</i>
" 5. <i>reticulata</i> *	" 45. <i>fallax</i> *
" 6. <i>gracilis</i> *	" 46. <i>subfasciata</i> *
" 17. <i>dorsalis</i> *	" 55. <i>hæmatogastra</i> *
" 19. <i>amazili</i> *	" 56. <i>frontalis</i> *
" 20. <i>papuensis</i> *	" 68. <i>zonata</i> *
<i>Libellula</i> 5. <i>tessellata</i>	" 73. <i>sexmaculata</i>
" 15. <i>rufinervis</i> *	" 76. <i>luctuosa</i> *
" 24. <i>terminalis</i> *	

(b) Collection not mentioned.

<i>Calopteryx</i> 3. <i>Titia</i> .	<i>Aeschna</i> 1. <i>lunulata</i>
<i>Diastatomma</i> 3. <i>tricolora</i>	" 12. <i>vernalis</i>
" 8. <i>hamata</i>	<i>Libellula</i> 32. <i>fulvia</i>

(c) v. Winthem's collection.

Aeschna 17. *dorsalis** (see also above)

PREVIOUS STUDIES OF BURMEISTER'S TYPES.

General acknowledgments of aid received by subsequent students of Odonata from Burmeister himself, or those whose collections he used, are contained in

De Selys and Hagen : *Revue des Odonates ou Libellules d'Europe*, Liège, 1850, page 265, 266, from Burmeister.

The same : *Monographie des Calopterygines*, Liège, 1854, p. viii, Sommer at Altona, Schaum at Berlin, and Burmeister.

The same : *Monographie des Gomphines*, Bruxelles, Leipzig, Paris, 1858, p. viii. Schaum at Berlin, Burmeister at Halle, Sommer at Altona.

Hagen, H. A. *Synopsis of the Neuroptera of North America*, Washington, 1861, p. vi. "Species collected in South Carolina by Mr. Zimmermann, and furnished by the late Prof. Germar of Halle. . . . My own collection, containing the types of Winthem, described by Prof. Burmeister. . . . Some types, chiefly from Labrador, described by Mr. Burmeister, and contained in the collection of Mr. Sommer at Altona."*

* On the same page vi is the statement "Where an (!) has been added to the name of the author, I have seen the types which he described." It is necessary to be cautious in applying this information, however. On page 79 of the book, such a ! is added to Burmeister's name following "*Agrion discolor*," yet on page 80 it is said of the same species "unknown to me." The latter statement is probably correct.

Specific acknowledgments of having studied Burmeister's types are contained in various papers, and these are quoted, under the respective species, in the detailed list following.

ARRANGEMENT OF THE FOLLOWING LIST.

The numbers and names of the species follow the Handbuch, the pages of which are quoted. In brackets [] is placed the present generic name and, if Burmeister's be a synonym, the accepted specific name. The locality and collection quoted from the Handbuch follow in this type, in which are also printed any further extracts deemed necessary. The present location of the type or types, if known, succeeds, with any remarks which they require. The abbreviations used are B = Burmeister, M. C. Z. = Museum of Comparative Zoology, Cambridge, (†) see page 31 regarding the labels at Halle.

The accomplishment of the present work has only been rendered possible by the kindly aid of the late Prof. E. L. Taschenberg and of Mr. Henshaw. I greatly regret the death of the former, in his eightieth year, on the nineteenth of January last. He, his wife and son did much to render my stay in Halle very agreeable, and I wish that he could have received these results. To the Kaiserliche Leopold-Carolus Deutsche Akademie der Naturforscher in Halle, I was also indebted for the loan of several necessary journals to an unknown stranger.

DETAILED LIST OF TYPES.

1. *Gatt[ung] Agrion*. P. 817.

1. *Agrion lucretia* Drury. P. 818. [*Mecistogaster*.]

Aus Brasilien, nicht vom Kap, wie Drury sagt. Ein Weibchen in Sommers Sammlung.

The star (*) opposite the name of this species in Hagen's copy of Burmeister is the only, but insufficient, evidence that a female in the M. C. Z. with the label "Lucretia Dry. (libellula) linearis Fab. Brasilia," in an unknown hand, may be the type. This female agrees with the description of *Mecistogaster lucretia* by de Selys in 1860 (Bull. Acad. Belg.—2—x, p. 24). In 1890, however, de Selys stated (Ann. Soc. Ent. Belg. xxxiv, p. cxix) that his *lucretia* of 1860 ought to take the name of *amalia* Burmeister. See under No. 3 *post*.

2. **Agrion tullia** B. P. 818. [*Mecistogaster*.]

♀. Aus Westindien; in Sommers und der Hallenser Sammlung.

Two females under the green drawer-label "Tullia* Ind. Ocid. Th." in Burmeister's hand, at Halle. One is without a pin-label (T). The other with a green printed pin-label "Rio d. Jan." agrees better with Burmeister's description of *lucetia* Drury, as the pterostigma is concolorous with the white wing-apices. *Tullia* is considered by Selys to be a synonym of *Mecistogaster linearis* Fab.

3. **Agrion amalia** B. P. 818. [*Mecistogaster*.]

Aus Brasilien. Mehrere Männchen in beiden Sammlungen; vielleicht das andere Geschlecht der vorigen Art.

One male (T) under the green drawer-label "Amalia* Bras. Smr." at Halle.

The star and dash (* —) in Hagen's copy of Burmeister is the only evidence for the typical character of a male in the M. C. Z. labeled "Agrion amalia Burm Bras" in an unknown hand. This male agrees with de Selys' description of *Mecistogaster lucetia* of 1860, but I am unable to say whether it is identical with the type at Halle or not. See under No. 1 *ante*.

4. **Agrion macrurum** B. P. 819. [*Leptagrion*.]

♂ et ♀. Aus Brasilien. Sommers Sammlung.

I have not found the type. Hagen's copy of Burmeister has this species marked with star and dash (* —), but there are no Burmeister specimens in the M. C. Z. This species is referred to *Leptagrion* by de Selys (Bull. Acad. Belg. —2—xliv, p. 977, 1876), but he does not quote the type.

5. **Agrion dorsale** B. P. 819. [*Leptagrion*.]

♂ et ♀. Aus Brasilien. Sommers Sammlung.

One male in M. C. Z. with the label "A. dorsalis* Br. Brasilia coll. Sommer"; the words "coll. Sommer" are underlined, and were added by Hagen. This male agrees with de Selys' description (Bull. Acad. Belg. —2—xlv, p. 981, 1876) of *Leptagrion dorsale*, except that the labrum is black instead of "jaunatre."

6. **Agrion croceum** B. P. 819. [*Leptagrion*.]

Aus Surinam. Sommers Sammlung.

One male in M. C. Z. with the label "A. crocea* Br. coll. Som̄er. Surinam"; the words "coll. Som̄er." are in Hagen's hand. De Selys, in describing this species as *Leptagrion croceum*, says (Bull. Acad.

Belg.—2—xlii, p. 989, 1876) that his description is based on the "Type unique de Burmeister, actuellement coll. Hagen. Le Dr. Hagen ayant eu la bonté de me communiquer ce type précieux, qui est en très-mauvais état, j'ai pu le decrire avec soin et en prendre un dessin exact." De Selys was, fortunately, able to describe the wings, of which only the bases now remain, so that the condition of the type is still worse.

7. **Agrion fumipenne** B. P. 819. [*Argia*.]

Aus Kentucky. v. Winthem's Sammlung.

One female in M. C. Z. with the written label "fumipennis Br.* Kentucky", the printed label "Winthem."

8. **Agrion discolor** B. P. 819. [*Amphiagrion saucium* B. and *Ischnura verticalis* Say.]

testaceum unicolor, vel dorso rubicundo vel dorso toto nigro-aeneo, thorace bivittato; alarum stigmatibus pallido. Long. 1" ♀.

Aus Süd-Karolina; 2 Exemplare in der Hallenser Sammlung, von Zimmermann gesendet.

Three females at Halle, no pin-labels, stand under the pink drawer-label "discolor* Carol. Zm." in Burmeister's hand. Of these three one (♂) is a teneral female of *A. saucium* Burm., recognizable by the very acute, upper, outer angle of the pterostigma, and corresponds to the "dorso rubicundo" of the description; the last four abdominal segments are wanting. A second (♂) is a 'black' female of *Ischnura verticalis* Say and corresponds to the "dorso toto nigro-aeneo, thorace bivittato." The third female is an orange female of *Anomalagrion hastatum* Say and cannot be a type, as Burmeister quotes but two, and as the colors of this one do not correspond with his description.

De Selys (Bull. Acad. Belg.—2—xli, p. 285, 1876) has placed *discolor* as a synonym of *Amphiagrion saucium* Burm. Kirby (Catal. Odon. p. 143, 1890) has reversed the position of these two names, making *saucium* the synonym, presumably on the ground that in Burmeister's work *discolor* is No. 8 and *saucium* No. 10. Since it is now shown that Burmeister confused two species under *discolor*, it is evident that De Selys, and not Kirby, is to be followed in this matter of nomenclature.

9. **Agrion denticolle** B. P. 819. [*Ischnura*.]

♀. Aus Mexico.

One female (♂) under the green drawer-label "denticolle* Mexico" in Burmeister's hand, at Halle. (Pl. I, fig. 13).

On comparing this type with the description of *Nehalennia? denticollis* by de Selys (Bull. Acad. Roy. Belg.—2—xli, p. 1244, 1876) the only differences from that description which I could find were that the only black on the epistoma is a narrow basal band, and that there is a *suggestion* of a ventral spine at the apex of the eighth abdominal segment. De Selys adds (l. c. p. 1245) "Le Dr. Hagen n'a pas vu la femelle type de Burmeister, mais l'identité lui semble probable, d'après la forme du prothorax."

I have pointed out the identity of *Ischnura exstriata* Calvert with *denticolle* in Ent. News ix, p. 72.

10. **Agrion saucium** B. P. 819. [*Amphiagrion*.]

♂. Aus Süd-Karolina, von Zimmermann; in Germars und der Hallenser Sammlung.

One male in the M. C. Z. with the pink pin-label "Coll. Germar saucium Br. * Carolina. Type Burm. 819. 10." The words "saucium Br. * Carolina" may be in Burmeister's hand, the others are in Hagen's. The tip of the abdomen of this male is in bad condition.

One male (T) under the pink drawer-label "saucium * Carol. Zm." in Burmeister's hand, at Halle. This specimen has been repaired at some time and the abdomen is fastened by its apex to the thorax.

This species is the *Amphiagrion saucium* of de Selys (Bull. Acad. Roy. Belg.—2—xli, p. 285, 1876) who expressly adds "La description du male est faite sur le type de Burmeister que M. Hagen m'a transmis." Under No. 8, *ante*, it is shown that *discolor* Burm. is, in part, the female of *saucium*.

11. **Agrion tuberculatum** Charpentier. P. 819. [*Ischnura elegans*.]

Bei uns, hie und da an Teichen, aber selten.

One female under the white drawer-label *tuberculatum* Charp. in Burmeister's hand, at Halle.

12. **Agrion pumilio** Charpentier. P. 820. [*Ischnura*.]

In Ungarn, dem nördlichen Italien und südlichen Deutschland.—Ein Pärchen in Germars Sammlung.

One male and one female on the same pin in M. C. Z. with the label "coll. Germ. pumilio Charp. Type Burm. II. 820, 12." in Hagen's hand, except the words "pumilio Charp." Two females and one male under the white drawer-label *pumilio* Charp., in Burmeister's hand, at Halle.

13. **Agrion hastulatum** Charpentier. P. 820. [*Agrion*.]

Gemein in Schlesien, auch bei Halle. Völlig dieselbe Art erhielt die Hallenser Sammlung vom Vorgebirge der guten Hoffnung aus der Drègeschen Sammlung.

Three males, two females under the white drawer-label *hastulatum* Charp. in Burmeister's hand, at Halle.

14. **Agrion interruptum** Charpentier. P. 820. [*Agrion pulchellum* VL.]

In Deutschland, bei Berlin und Halle, doch viel seltener als die folgende Art.

One female under the white drawer-label *interruptum* Charp., in Burmeister's hand, at Halle.

15. **Agrion furcatum** Charpentier. P. 820. [*Agrion puella* L.]

Sehr gemein bei Halle und Berlin.

Three males, two females under the white drawer-label *furcatum* Charp., in Burmeister's hand, at Halle.

16. **Agrion heterostictum** B. P. 820. [*Ischnura*.]

pallidum, dorso nigro-æneo, mesonoto bivittato, abdominis segmento secundo chalybæo. ultimis 3 pallidis; stigmatibus alarum anticarum nigro, in apice albido, alarum posticarum toto albido. Long. 1" 2'''.

Aus Neu-Holland, mehrere Männchen in Germar's Sammlung.

One male in M. C. Z. with the pin-label "Coll. Germar heterostictum Br. Type Burm. II, 820, 16. Nov. Holl."; the words 'Coll. Germar' and 'Type Burm. II, 820, 16.' are in Hagen's, the others in an unknown hand.

This species is the *Ischnura heterosticta* of de Selys (Bull. Acad. Roy. Belg.—2—xli, p. 271, 1876) who remarks "Burmeister donne pour patrie: Nouvelle Hollande, d'après plusieurs males de la collection Germar. Quoiqu'il dise que le 10e segment est également pâle et que le ptérostigma des inférieures est tout blanc, je ne puis guère douter de l'identité." This remark is quite just, for the above cited male agrees with de Selys' description throughout and has the 8th and 9th segments, not the 10th, "pallidis," and the pterostigma of the hind wings barely darker in the centre.

17. **Agrion glaucum** B. P. 821. [*Enallagma*.]

Vom Vorgebirge der guten Hoffnung, 2 Männchen aus der Drègeschen Sammlung.

Two males (T), one with a bit of unmarked blue paper on its pin, under the blue drawer-label "glaucum * Pr. b. sp." in Burmeister's



Yours truly
Geo. W. Stearns.

hand, at Halle. These males agree with de Selys' description of his *Enallagma gabonense* (Bull. Acad. Roy. Belg.—2—xli, p. 533, 1876). This latter, as its name indicates, was described from the Gaboon, but I have a pair (♂ ♀) of this species from the Cape, sent to me by M. Martin. The female has not hitherto been described. Its markings are much like those of the male, but the blue and green of the latter are replaced by luteous (the individual is evidently teneral), the postocular spots are larger, dorsum of 8–10 black, appendages luteous, as long as 10, apical ventral spine of 8 well developed, all the tibiae with an anterior (external) black line (this is also true for the male), pterostigma very pale luteous. Abdomen 26 mm., hind wing 18.5 mm.

Baron de Selys describes a "*Disparonevra glauca* Burm." (Bull. Acad. Roy. Belg.—2—x, p. 443, 1860) stating its locality thus "Cap de Bonne-Espérance, par Dregé.—Port natal. (Collect. Selys, Hagen)." It will be noticed, therefore, that he does not assert having seen Cape individuals, while in the M. C. Z. there is a female with a pin-label, in Hagen's hand, "*A. glaucum* M. B. Dregé Catal. No. 1511," and this is a *Disparoneura*. Probably Drège confounded two species.

18. **Agrion glabrum** B. P. 821. [*Ceriagrion*.]

Long. ♂. 1" 3". ♀ 1" 4".

Vom Vorgebirge der guten Hoffnung, aus Drège's Sammlung.

One male (T), one female (T), each with a bit of unmarked blue paper on its pin, under the blue drawer-label "*glabrum* * Pr. b. sp." in Burmeister's hand at Halle. I compared them with de Selys' description of *Ceriagrion glabrum* (Bull. Acad. Roy. Belg.—2—xlii, p. 527, 1876) and found them to agree therewith. The length of the male is 36 mm., of the female 42 mm.

19. **Agrion pruinoseum** B. P. 821. [?]

nigro-æneum, ore pectore abdominisque ventre testaceis; alarum stigmatibus luteo. Long. 1" 3".

A. pruin. de Haan, in litt.

Aus Java, ein Männchen vom Herrn Graf v. Hoffmannsegg mitgetheilt.

I have not been able to identify Burmeister's type of this species. Baron de Selys describes a species of *Pseudagrion* under this name (Bull. Acad. Roy. Belg. (2), xlii, p. 517, 1876), but does not quote the type. A male with a printed label "*Mus. Berol.*," and a written label "*pruinoseum* Java Burm." in Hagen's hand, in the M. C. Z.,

agrees with De Selys' description, but cannot be Burmeister's type as the pectus is mostly black; Hagen's identification may, nevertheless, be correct, as De Selys states that in the younger individuals the pectus is paler. The last four segments of this male are lost.

Two males found by me standing under the yellow drawer-label "pruinose d. Haan Java" in B.'s hand, at Halle, no pin-labels, are specifically different from each other and from de Selys' description of *Pseudagrion pruinose*. Both agree with Burmeister's description. I could not identify them.

One agrees with *Pseudagrion* in venation, but has the inferior appendages distinctly longer than the superior appendages, although not as long as 10, and similar in profile view to those of *Enallagma civile* for example. Superior appendages little more than half as long as the inferiors, in profile bifid at apex with a thicker, superior branch and a slender, straight, longer, inferior branch, approximately parallel, not divergent. Rhinarium, lips, and rear of head luteous. No apparent postocular spots. Vertex, prothorax and thoracic dorsum to second lateral suture blackish, little metallic reflection; sides behind second lateral suture and pectus yellow. Dorsum of 1-7 metallic-blue or green, of 10 black; 8 and 9 pale blue, 9 with a black band on either side of the dorsum only in the apical half, uniting at apex with fellow of opposite side. Ventral surface of 1-10 yellowish. Pterostigma luteous, darker in the middle, surmounting slightly less than one cell; 14 postnodals. Abd. 31. Hind wing 23.

The other male has the last four abdominal segments wanting; a Platynemine (legion) wing has been wrongly added, the other three are genuine. It belongs to the legion Agrion, has the inferior sector of the triangle rising far in front of the submedian cross-vein, which is placed between first and second antenodals. Wings petiolated not quite as far as level of first antenodal. Upper side of quadrilateral one-fourth as long as the lower side on the front wings, slightly less than one-half as long as the lower side on the hind wings; 11 postnodals. Pterostigma luteous, surmounting one cell. Vertex and rear of head black, no postocular spots. Rhinarium, lips yellow. Thoracic dorsum dark metallic purple to first lateral suture. Sides and pectus yellow, a complete black line on second lateral suture. Dorsum of 1-6 dark metallic blue, with an interrupted, narrow, basal, yellow ring on 3-6. Inferior abdominal surface obscure yellowish. Total length of head, thorax and first six abdominal segments 24 mm., hind wing 18 mm.

20. *Aggrion cafferum* B. P. 821. [*Pseudagrion*.]

nigro-æneum, ore fronte infra pectore abdominisque ventre rubropallidis; alarum stigmatibus fusco; mesonoti vitta laterali pallida. Long. 1" 4'''.

Vom Port natal und St. Johanna, einer der Comorischen Inseln, 2 Männchen, das eine aus der Drègeschen Sammlung, das andere von Hrn. Sommer.

Three males stand under the blue drawer-label "cafferum * Afr. austr." in B.'s hand, at Halle; two with bits of unmarked blue paper on their pins, the other without any pin-label. The three are all

specifically different as shown by the shapes of their appendages. Only one can be a type, as it alone has "fronte infra . . . rubropallidis" and "mesonoti vitta laterali pallida"; the other two are a *Pseudagrion pratextatum* Selys (= *P. Deckeni* Gerstaecker, Karsch, Berl. Ent. Zeit. xxxviii, p. 38, 1893) and a *Pseudagrion* species which I could not identify.

In the M. C. Z. is a male with the label "A caffrum Burm. type* coll. Soëmer" in Hagen's hand; it agrees with the description of the presumed type at Halle which follows:

♂ (type). Vertex blackish with metallic green reflection in parts; an indistinct postocular spot and occiput reddish (?); frons and the first two joints of antennæ pale reddish brown, clypeus and labium luteous, labrum yellow-orange, rear of head yellowish.

Prothorax blackish, a yellowish spot above the first legs; hind margin entire, rounded.

Thoracic dorsum black with some green and blue metallic reflections; a narrow, pale blue, antehumeral stripe; sides perhaps pale blue in life, markings obscured in drying, but apparently there was a black line on the upper half of the (obliterated) first lateral suture and a complete black line on the second lateral suture. Pectus pale yellowish.

Legs (3 wanting) luteous, femora superiorly, tibiæ anteriorly black.

Abdomen: dorsum of 1-8 and of 10 black with blue metallic reflections. Articulation between 8 and 9 and dorsum of 9 pale blue; sides of 9 black, connected on the dorsum with that of the opposite side by a transverse, apical, black band whose width is equal to one-fifth of the length of the segment. Apical margin of 10 concave to a depth of not quite one-half the length of the segment. Ventral surface of 1-10 yellow.

Appendages clogged with some yellow substance which renders accurate description difficult. Superiors slightly longer than 10, directed slightly downward; viewed from above, slightly curved throughout their entire length, the convexity outward, tip of inferior branch directed inward as a fine black point. Viewed in profile, the superior margin is slightly convex; apical half bifid, inferior branch directed downward at an angle of 45° with the superior, which is continued in the prolongation of the basal half of the appendage; the inferior branch reaches hardly farther backward than does the superior branch (compare this description, however, with Pl. I, figs. 2 and 3, from the much better preserved type in the M. C. Z.).

Inferior appendages about half as long as the superiors, apparently slender and directed upward and backward.

Wings: pterostigma reddish brown with a narrow yellowish line immediately within the bounding black veins, outer side slightly more oblique than the inner, surmounting one cell; three antenodal cells.

Front wings with upper side of quadrilateral slightly less than half as long as the lower side; 15 R, 16 L postnodals; nodal sector arising slightly in front of the seventh postnodal.

Hind wings with upper side of quadrilateral slightly more than half as long as lower side; 15 R, 14 L postnodals; nodal sector arising slightly in front of the sixth postnodal.

Total length 43.5. Abdomen 35. Front wing 27. Hind wing 26.

In Hagen's own copy of de Selys' "Synopsis des Agrionines grand genre Agrion," 1876, now in the library of the M. C. Z., opposite the name *Pseudagrion angolense* is the note, in Hagen's hand, " = caffrum Br." On comparing the M. C. Z. type of *caffrum* with the description of *angolense* I think that the appendages, as well as some other parts, do not agree.

21. **Agrion minium** Harris. P. 821. [*Pyrrhosoma*.]

In Deutschland, aber selten.

Two males, three females under the white drawer-label "minium Charp. Berol." in B.'s hand, at Halle; no pin-labels other than one ♂ and one ♀ sex-mark.

22. **Agrion chloridium** Charp. P. 821. [*Erythromma najas* Hansm.]

In Deutschland, nicht selten.

One male, one female under the white drawer-label "chloridium v. Ch." in B.'s hand, at Halle; no pin-labels.

23. **Agrion lacteum** Charp. P. 822. [*Platynemis pennipes* Pallas.]

In Deutschland nicht selten, bei Halle sehr gemein.

Two males, two females under the white drawer-label "lacteum Charp. Halæ" in B.'s hand, at Halle; no pin-labels.

24. **Agrion fasciatum** B. P. 822. [*Chlorolestes*.]

Vom Port natal, 2 Männchen aus Drège's Sammlung.

Two males (♂) under the blue drawer-label "fasciatum * Pr. b. sp. Drg." in B.'s hand, at Halle; one with a bit of unmarked blue paper on its pin, the other without any pin-label. Both agree with de Selys' description of *Chlorolestes fasciata* (Bull. Acad. Roy. Belg. —2—xvi, p. 36, 1862), except that these types have 17 and 21 post-cubitals on the front wings instead of 14–16. In de Selys' description the words "dedans" and "dehors" referring to the feet should be transposed.

25. **Agrion tessellatum** B. P. 822. [*Chlorolestes*.]

Eben daher; gleichfalls 2 Männchen.

Two males (♂) under the blue drawer-label "tessellatum * Pr. b. sp. Drg." in B.'s hand, at Halle; one with a bit of unmarked blue paper on its pin, the other without any pin-label. Both agree with de Selys' description (*l. c.* p. 35) of *Chlorolestes tessellata*.

26. **Agrion longicaudum** B. P. 823. [*Chlorolestes longicauda et conspicua*.]

supra nigro-æneum, subtus pallidum; mesonoto vittis duabus dorsalibus et lateralibus aurantiaco-flavis; segmentis abdominalibus in basi fascia interrupta angusta pallida.

♂. alis aqueis, stigmatibus elongato castaneo. Long. $1\frac{1}{2}$ ".

♀. alis luteis, stigmatibus dimidie nigro, dimidie castaneo. Long. $1\frac{1}{3}$ ".

Ebendaher und ebenda; das Männchen ist durch seinen äusserst schlanken Hinterleib sehr ausgezeichnet.

One male (♂) with pin-label '385', and one female (♀) with a bit of unmarked blue paper under the blue drawer-label "longicaudum * Pr. b. sp. Drg." in B.'s hand, at Halle. The male measures 60 mm. long and its pterostigma 3 mm.; it agrees with de Selys' description (*l. c.* p. 34) of *Chlorolestes conspicua*. The female is 50 mm. long., its pterostigma 2.25 mm., and agrees with de Selys' description (*l. c.* p. 35) of *Chlorolestes longicauda*.

27. **Agrion phallatum** Charp. P. 823. [*Sympyca fusca* VL.]

Hie und da in Deutschland und Ungarn.

One male, one female under the white drawer-label "phallatum Charp. Germ." in B.'s hand, at Halle; no pin-labels.

28. **Agrion cingulatum** B. P. 823. [*Lestes*.]

Aus Neu-Holland, beide Geschlechter in der Hallenser Sammlung.

One male (♂), one female (♀) under the lilac drawer-label "cingulatum Holl. nov." in B.'s hand, at Halle; no pin-labels. They agree with de Selys' description (*Bull. Acad. Roy. Belg.*—2—xiii, p. 334, 1862) of *Lestes cingulata*, but in his description of the abdomen 'dessus' and 'dessous' should be transposed. As his description was made from imperfect individuals, the following notes were made from the types to supply the deficiencies.

♂ (type). Pale blue basal spot on the second abdominal segment rounded posteriorly and, on the mid-dorsal line, reaching to a little more than one-third the length of the segment. Basal annuli on 3 8 (on 8 very narrow) also pale blue.

Superior appendages (Pl. I, fig. 1) as long as 8, and longer than 9 or 10. Viewed from above, they are curved inward at two-fifths their length, the apical three-fifths being approximately straight; the two consequently come in contact at their apices; external margin for rather more than the middle third denticulated; a strong, oblong, basal tooth, directed downward (ventralward), backward and inward, with its apex truncated almost at right angles to its sides; in the middle third a second, very acute, slightly longer, infero-internal tooth, directed backward, only partially visible when the appendage is viewed from directly above; terminal third dilated cylindrically on the inner side before the apex, which is obtuse, rounded and somewhat hairy.

Inferior appendages about one-eighth as long as the superiors, slender, in close contact with each other, and extending backward about as far as does the basal tooth of the superiors.

♀ (type). Basal annuli on 3-7 pale reddish. The pale reddish spot at the base of 2 reaches, on the mid-dorsal line, to one-half the length of the segment.

Abdomen ♂ 31, ♀ 30. Hind wing ♂ 22, ♀ 24.

In the M. C. Z. is a male, whose last four abdominal segments are wanting, with a lilac pin-label "*Coll. Germar cingulatum Br. Type Burm. II. 823. 28 Nov. Holl.*" in which the words here printed in italics are in Hagen's handwriting. While this male is of the same species, I see no reason to regard it as a type, and the same remark applies to a specimen, with the last seven segments lacking, which I saw in de Selys' collection in August, 1896, and which had a label written by Hagen "*Agr. cingulatum Burm. type Nouv. Holl.*," and a printed label "*Mus. Berol.*"

29. **Agrion plagiatum** B. P. 824. [*Lestes.*]

♂. et ♀. Vom Fort natal, aus Drège's Sammlung.

One male (T), one female (T) under the blue drawer-label "*plagiatum Pr. b. sp.*" in B.'s hand, at Halle; no pin-labels. Both agree with de Selys' description (*l. c.* p. 324) of *Lestes plagiata* and, in spite of the difference in locality noted on the label, may be safely regarded as the types from B.'s remark under No. 30. The apex of the abdomen of the male is represented in Pl. I, fig. 4.

30. **Agrion virgatum** B. P. 824. [*Lestes.*]

♂. ♀. Eben daher.—Beide Arten in der Hallenser Sammlung.

Two males (T), one female (T) under the blue drawer-label "*virgatum Pr. b. sp. Drg.*" in B.'s hand, at Halle; no pin-labels, other than a bit of unmarked blue paper on the pin of one male. These agree with de Selys' description (*l. c.* p. 323) of *Lestes virgata*, except that they are larger: Abdomen ♂ 41, ♀ 39; hind wing ♂ 27.5, ♀ 29 mm. The apex of the abdomen of the male is represented in Pl. I, fig. 9.

31. **Agrion barbarum** Van der Linden. P. 824. [*Lestes.*]

Gemein an Teichen.

One male, one female under the white drawer-label "*barbarum V. Lind. Charp.*" in B.'s hand, at Halle; no pin-labels.

32. **Agrion forcipula** Charp. P. 824. [*Lestes sponsa* Hansm.]

Ebenda, und nicht minder häufig.

Two males, one female under the white drawer-label "*forcipula Charp.*" in B.'s hand, at Halle; no pin-labels.

2. Gatt[ung] Calopteryx.

1. **Calopteryx lineata** B. P. 826. [*Micromerus*.]

Aus Java, in v. Winthem's Sammlung.

One male with the printed pin-label "Winthem", and the written pin-label "* Java lineata Br.," in the M. C. Z. It agrees with the description in de Selys' Monog. Calopt., p. 237, of *Micromerus lineatus*, young male.

2. **Calopteryx fenestrata** (Wiedem.) B. P. 826. [*Rhinocypha*.]

Eben daher, ein Männchen in v. Winthem's Sammlung.

One male with the written pin-label "Java * Agr. fenestrata", in the M. C. Z. It agrees with the description of *Rhinocypha fenestrata* in Selys' Monog. Cal., where, on p. 219, is the following note: "M. Rambur a cru que la *fenestrata* de M. Burmeister se rapportait plutôt à la *perforata*. C'est une erreur prouvée par l'examen du type de la collection Winthem".

3. **Calopteryx titia** Drury. P. 826. [*Heterina*.]

Von der Honduras-Bay.

Burmeister does not state that he has seen this species, and I have not found any type of his in any collection.

4. **Calopteryx americana** Fabr. P. 826. [*Heterina*.]

Aus Amerika. Zwei von Fabricius beschriebene Exemplare in der vormals Hübnerschen, jetzt Germarschen Sammlung; beide haben jedoch weder Kopf noch Hinterleib.

Two males in the M. C. Z. have each this label "Agr. americana * type Fabr. * Burm. coll. Hybner, later coll. Germar" in Hagen's hand. One of these two has also "coll. Huebner. Germ. americana Fabr. typ. Typ. Burm." of which the words "americana Fabr. typ." are in a larger hand, the others in Hagen's. Both of these males lack the head and abdomen (except the first segment). They are referred to by Baron de Selys (Monog. Calopt. p. 133) "Comme il [Fabricius] a décrit cette espèce [*americana*] d'après des types de la collection Hybner, qui ont été communiqués obligeamment à M. Hagen par M. Germar, il ne peut pas y avoir de doute sur son identité."

It may be noted that at Halle, under the pink drawer-label "americana Carol. Zm."† in Burmeister's hand, I found three females, without pin-labels, of *Calopteryx maculata* Beauvois, although one of them may be Burmeister's *C. dimidiata* (see No. 16).

† *I. e. americana* Carolina Zimmermann.

5. **Calopteryx Caja** [nec] Drury.. P. 826. [*Hetærina auripennis et hebe.*]

Aus Brasilien, 2 Männchen in Sommer's Sammlung.

One male under the green drawer-label "Caja Drur. Bras. Bokl'" in B.'s hand, at Halle; it has three pin-labels—a white ♂ sex-mark, a green printed label "Rio. d. Jan.", and a white label "Hetærina" in Hagen's hand. I could not compare it with the Monographie des Calopterygines. There is no label on any specimen in the M. C. Z. showing it to have been B.'s type. The synonymy given above is according to Monog. Calopt. p. 106, although nothing is there said of having studied B.'s types. See also note under No. 10 *post*.

6. **Calopteryx Brightwelli** Kirby. P. 827. [*Hetærina.*]

Aus Brasilien, ein Männchen in der Hallenser Sammlung, von Herrn Thorey in Hamburg mitgetheilt.

One male under the green drawer-label "Brightwelli Kirb. Bras. Thor." in B.'s hand, at Halle; no pin-labels.

7. **Calopteryx tricolor** B. P. 827. [*Hetærina.*]

Aus Pennsylvanien.

One male in the M. C. Z. with the printed label "Winthem", the written labels "Philadelphia" and "C. tricolor * Burm. II. 827. 7", the latter in Hagen's hand. It agrees in part with the description of *Hetærina tricolor* in Selys' Monog. Calopt., p. 136, but the specimen has apparently been broken and repaired for the last seven abdominal segments do not agree with the description and figure of the Monographie, but belong apparently to *H. carnifex* Hagen. De Selys says (*l. c.*) of the description of *tricolor*: "Décrite d'après le mâle type, de Philadelphie (collection Winthem), et un couple du Musée de Vienne, reçus de l'Amérique septentrionale."

8. **Calopteryx apicalis** B. P. 827. [*Calopteryx.*]

♂. ♀. Vaterland unbekannt; in v. Winthem's Sammlung.

In the M. C. Z. are the following specimens with pin-labels: one male "Winthem" (printed), "apicalis * Burm. Philadelphia" (written), "* Burm. II. p. 827.8" (written in Hagen's hand); one male "Winthem" (printed), "* Burm. II. p. 827.8. Philadelphia, Pa." (written in Hagen's hand); one female "Winthem" (printed), "* Burm. II. p. 827.8. Philadelphia, Pa." (written).

In his most recent publication on this species (*Psyche*, v, p. 246. Dec., 1889), Hagen states that his material consisted, among others, of "Burmeister's types from Philadelphia, Pa., two males, one female without pterostigma;" they are also cited in the Monographie des Calopterygines, p. 24 (1854).

9. **Calopteryx iridipennis** B. P. 827. [*Phaon*.]

♂ Vom Port natal, aus Drège's Sammlung;

One male (T) under the blue drawer-label "iridipennis * Pr. b. sp. Drg." in B.'s hand at Halle; no pin-labels other than a bit of unmarked blue paper.

Hagen's copy of B.'s work has the * — for this species, but there is no Burmeister specimen in the M. C. Z.

10. **Calopteryx auripennis** B. P. 827. [*Heterina*.]

♀ Vaterland unbekannt, in v. Winthem's Sammlung.

A female in the M. C. Z. with the pin-labels "Winthem" (printed) and "Agrio auripennis * Brasil?" (written) is probably the type; it agrees with the description of *Heterina auripennis* in de Selys' Monog. Calopt. p. 109.

I found no drawer-label for this species at Halle, but a female with a green pin-label in Hagen's (?) hand "C. auripennis Br. ♀ Cajæ". See No. 5 above.

11. **Calopteryx chinensis** Fabr. P. 828. [*Neurobasis*.]

♂. ♀. Aus China, woselbst häufig.

One male under the yellow drawer-label "chinensis A. ch. Fabr. China Smr." in B.'s hand, at Halle; no pin-labels.

Hagen's copy of B.'s work has * —, but there is no Burmeister specimen in the M. C. Z.

12. **Calopteryx luctuosa** (de Haan) B. P. 828. [*Vestalis*.]

Agr. malachiticum de Haan. in litt.

Aus Java, beide Geschlechter in der Hallenser Sammlung.

One male (T), one female (T) under the yellow drawer-label "luctuosa d. H. ♀ malachitica d. H. Java v. Hoffm." in B.'s hand, at Halle; the ♂ with a pink pin-label '25', the last four abdominal segments wanting; the ♀ with the pink pin-label '26'.

13. **Calopteryx holosericea** B. P. 828. [*Calopteryx maculata* Beauv.]

Aus Java; beide Geschlechter in Sommer's und v. Winthem's Sammlung.

The following specimens are in the M. C. Z. One male with two written pin-labels (1) "A. fumipennis Br." in B.'s hand, but without border, and on the reverse side "C. holosericea Burm. 828. * No. 13 coll. Somer" in Hagen's hand, and (2) "C. holosericea * Burm. II. 828. 13. coll. Sommer. Java (error)" in Hagen's hand. Next follows a female with the pin-label "Java (error!) Aus Leiden 1864", not a

type, see below. One male with the pin-labels "Winthem" (printed), "holosericea Br. Philadelphia" (written). One male with the pin-labels "Winthem" (printed), "C. holosericea * Burm. * Sel. Hag." in Hagen's hand. One female with the pin-labels "Winthem" (printed), "C. holosericea ♀ * Burm. * Selys Cal. p. 29" in Hagen's hand. One male "Winthem" (printed), "Pensylvan" (written), "C. maculata * Burm." in Hagen's hand; this male has clear spots in the dark portions of the wing.

Pinned to the bottom of the drawer below the above specimens is the following note in Hagen's hand: "The 5 specimens (the ♀ from Leyden excepted) are Burm. types. The male labeled Java was presented to me by Mr. Sommer, and in the collect. label. C. fumipennis Br., which name was changed in the Hdb., as he has done several times. Perhaps Sommer's specimen came from the Leyden Mus., what would explain the error. The types Winthem has Philadelphia on the label, not mentioned by Burm."

De Selys (Monog. Calopt. p. 29) has also a note on *Calopteryx maculata* (with *holosericea* Burm. as a synonym) beginning "Nous avons examiné un grande nombre d'individus entre autres les types de Rambur et de Burmeister."

14. *Calopteryx virgo* L. P. 828. [*Calopteryx*.]

Hie und da in Deutschland, und dann gemein.

Two males, two females under the white drawer-label "virgo Lin. ♂ & ♀ German." in B.'s hand, at Halle; one male and one female each with a white sex-label, the latter also with a white pin-label which I could not interpret.

15. *Calopteryx parthenias* Charp. P. 828. [*Calopteryx splendens* Harr.]

In den meisten Gegenden Deutschlands,

Three males, three females under the white drawer-label "parthenias Charp. Halæ" in B.'s hand, at Halle; no pin-labels.

16. *Calopteryx dimidiata* B. P. 829. [*Calopteryx*.]

Aus Nord-Amerika, ein Weibchen in der Hallenser Sammlung.

No drawer-label for this species at Halle (see note under No. 4).

One female in the M. C. Z. with the pin-labels "Winthem" (printed), "dimidiata Burm. * Kentucky" and "* Burm. II. p. 826. 16." Hagen's copy of B. has no * opposite this name, but in Psyche, v, p. 246, 1889, he quotes Burmeister's type.

17. **Calopteryx maculata** Beauv. P. 829. [*Calopteryx*.]

Aus Nord-Amerika.

No drawer-label for this species at Halle. See the note on No. 13 above.

3. **Gatt[ung] Diastatomma** Charp. P. 831.

1. **Diastatomma clavata** Fabr. P. 832. [*Ictinus*.]

Aus China; beide Geschlechter in Sommer's Sammlung.

I have not seen the types. Hagen's copy of B. has * — for this species, but no B. specimen is in the M. C. Z. De Selys in describing this species as *Ictinus clavatus* says (Monog. Gomph. p. 287) "Les exemplaires que nous avons eus sous les eux sont le mâle type de Burmeister, (collection Sommer)," etc.

Diastatomma decorata M. [us.] B. [erolinensis] no number or description. B. P. 832. [*Ictinus*.]

Das Hallenser Museum erhielt diese Art im männlichen Geschlechte durch Herrn Grafen von Hoffmannsegg.

One male under the yellow drawer-label "decorata M. B. Java Hoffm." in B.'s hand, at Halle; no pin labels.

This species was first described by de Selys in 1854 (Bull. Acad. Belg. xxi—2—p. 29) as *Ictinus decoratus* and, in the Monog. Gomph. p. 275, he states "Nous avons eu sous les yeux le type de Hoffmannsegg, cité par Burmeister au Musée de Berlin;"

2. **Diastatomma parallelogramma** B. P. 832. [*Macrogomphus*.]

Aus Java unter dem Namen Corduleg. parall. vom Herrn Grafen v. Hoffmannsegg.

One female (T) under the yellow drawer-label "parallelogramma M. B. Java Hoffm." in B.'s hand, at Halle; no pin-label.

Hagen's copy of B. has *, but no — before this name; a male in the M. C. Z. has a label in Hagen's hand including a "* Burm." De Selys, in the description of *Macrogomphus parallelogramma*, says (Monog. Gomph. p. 91, 1857) "Java, d'après la femelle type du Musée de Halle, communiquée obligeamment par le professeur Burmeister à M. Hagen, qui en a fait la description que je viens de transcrire."

3. **Diastatomma tricolora** Beauv. P. 833. [*Diastatomma*.]

Afrika, in der Nähe von Benin; ein Männchen dessen Raife winkelförmig gebogen sind und mit einen Knopfchen enden.

I have not found any B. specimens, and it is possible that B. did not see this species.

4. **Diastatomma campanulata** B. P. 833. [*Zonophora*.]

Aus Brasilien, in Sommer's Sammlung; ein Männchen,

I have not found the type. Hagen's copy of B. has * — for this name, but there is no B. specimen in the M. C. Z. De Selys, in the description of *Zonophora campanulata*, says (Monog. Gomph. p. 236, 1857) "Le Bresil, d'après le mâle type de la collection Sommer, décrit par M. Burmeister."

5. **Diastatomma serpentina** Charp. P. 833. [*Ophiogomphus*.]

Im mittleren und südlichen Deutschland, ziemlich häufig; beide Geschlechter wurden auch bei Halle öfters gefangen.

One male, two females, under the white drawer-label "serpentina Charp. Halæ" in B.'s hand, at Halle; no pin-labels.

6. **Diastatomma flavipes** Charp. P. 833. [*Gomphus*.]

In Schlesien, auch bei Halle.

One male, one female, under the white drawer-label "flavipes Charp. Halæ" in B.'s hand, at Halle; no pin-labels.

7. **Diastatomma forcipata** Charp. P. 834. [*Gomphus vulgatissimus* L.]

Ueberall gemein, zumal im mittleren Deutschland.

Two males, two females, under the white drawer-label "forcipata aut. Lipsiæ" in B.'s hand, at Halle; no pin-labels.

8. **Diastatomma hamata** Charp. P. 834. [*Onychogomphus forcipatus* L.]

In Deutschland und Schweden, aber selten.

The white drawer-label "hamata Charp. Halæ" in B.'s hand exists at Halle, but there are no specimens.

9. **Diastatomma gigantea** Leach. P. 835. [*Petalura*.]

Aus Neu-Holland, das Männchen von Leach abgebildet, das Weibchen in der Hallenser Sammlung.

One female under the lilac drawer-label "gigantea ♀ Petal. g. Leach Holl. nova." in B.'s hand at Halle; no pin-label. Hagen's copy of B. has the * —, but there is no B. specimen in the M. C. Z.

4. Gatt[ung] **Aeschna** Fabr. P. 835.

1. **Aeschna lunulata** Charp. P. 836. [*Cordulegaster annulatus* Latr.]

Ueberall in Europa hie und da, aber nirgends häufig.

I have not found any B. specimens.

2. **Aeschna 4-guttata** B. P. 837. [*Boyeria vinosa* Say.]

♀. Aus Pennsylvanien, in Sommer's und Germar's Sammlung.

One female (T) under the pink drawer-label "4-guttata Burm. Am. bor. Zn." in B.'s hand, at Halle; no pin-label. Hagen's copy of

B. has * —, but the only specimen labeled "Pennsylvanien" is a male and the specific label, in Hagen's hand, says nothing of its being a type.

3. **Aeschna costalis** B. P. 837. [*Neuræschna*.]

♀. Von Bahia, in Sommer's Sammlung.

I have not found the type. Hagen's copy of B. has * —, but there is no B. specimen in the M. C. Z. In Verhandlungen k. k. zoolog.-botanischen Gesellschaft in Wien, 1867, p. 54, Hagen says of the species of *Neuræschna*, "Ich kenne davon nur eine und besitze davon nur ein unvollständiges Weibchen *Ae. costalis* Burm. Ich habe 1849 von dem typischen Weibchen in Sommer's Sammlung, und von dem zur selben Art gehörenden typischen Männchen im Berliner Museum von *Gynacantha ferox* Erichson, Schomburgk's Reise in Guyana T. 3 p. 585 folgende Beschreibung entworfen."

4. **Aeschna luteipennis** B. P. 837. [*Aeschna*.]

♂. Aus Brasilien, in Sommer's Sammlung.

One male, in the M. C. Z., with the pin-label "coll. Somer A. luteipennis Burm. * Brasil" in Hagen's hand. Hagen says (Verhdl. z.-b. Gesell. Wien 1867, p. 50) of *Aeschna excisa* Brauer, "Diese Art ist *Ae. luteipennis* Burm. Ich besitze eine der beiden Typen Burmeister's aus Sommer's Sammlung."

5. **Aeschna reticulata** B. P. 837. [*Staurophlebia*.]

♂. Aus Surinam, in Sommer's Sammlung.

The green drawer-label "reticulata Burm. Bras. Boke" in B.'s hand exists at Halle, but there is no specimen. Hagen's copy of B. has * —, but there is no B. specimen in the M. C. Z. Hagen says (Verhdl. z.-b. Gesell. Wien 1867, p. 53) of *Staurophlebia magnifica* Brauer, "Ich halte diese Art für *Aeschna reticulata* Burm. von der ich die Type aus Surinam in Sommer's Sammlung verglichen habe."

6. **Aeschna gracilis** B. P. 837. [*Gynacantha*.]

Von Bahia, beide Geschlechter in Sommer's Sammlung.

I have not found the types. Hagen's copy of B. has * —, but there is no Burmeister specimen in the M. C. Z.

7. **Aeschna grandis** L. P. 838. [*Aeschna*.]

Gemein in nördlichen und mittleren Europa.

Two females under the white drawer-label "grandis Char. rufescens V. L." in B.'s hand, at Halle; no pin-labels.

8. **Aeschna chrysophthalma** Charp. P. 838. [*Aeschna rufescens* V L. = *isosceles* Müll.]

Im mittleren und südlichen Europa; seltener als die vorige, Art, fliegt auch später.

Two males under the white drawer-label "*rufescens* V. Lind. chrysoph. Charp. Austr." in B.'s hand, at Halle; no pin-labels.

9. **Aeschna juncea** L. P. 838. [*Aeschna cyanea* Müll.]

In ganz Europa, und nirgends selten.

One male, one female, under the white drawer-label "*juncea* aut. maculatiss. Charp. Styria" in B.'s hand, at Halle; no pin-labels; both are *Ae. cyanea* Müller.

10. **Aeschna mixta** Latr. P. 839. [*Aeschna coluberculus* Harr.]

In Deutschland, hie und da.

Two males, one female, under the white drawer-label "*mixta* V. L." in B.'s hand, at Halle; no pin-labels.

11. **Aeschna septentrionalis** B. P. 839. [*Aeschna*.]

corpore gracili fusco, viridi-cœruleo variegato; alarum stigmatibus elongatis nigris, membranula accessoria tota nigra. Long. 2' 1'''.

Uterque sexus alis cinerascentibus, cercisque breviusculis obtusis pilosis.

Aus Labrador, in Sommer's Sammlung.

One female in the M. C. Z. with the pin-label, "*A. septentrionalis* Burm. type coll. Sommer" in Hagen's hand, has lost the last three abdominal segments, the pterostigma is *pale brown*, the membranule *still paler brown*. Hagen has not noticed these differences in the most detailed description of this species which exists (*Psyche*, v, p. 354, June, 1890).

12. **Aeschna vernalis** Vander Linden. P. 839. [*Brachytron pratense* Müll.]

In Deutschland, Belgien, und Italien.

I have not found either B.'s label or specimens.

13. **Aeschna azurea** Charp. P. 840. [*Anax imperator* Leach.]

In Ungarn und Italien.

Some specimens stand below the drawer-label "*imperator* Leach formosus V. Lind." in B.'s hand, at Halle; no pin-labels.

14. **Aeschna guttata** M[us]. B[erol]. B. P. 840. [*Anax*.]

Aus Java; beide Geschlechter in der Hallenser Sammlung, unter obigem Namen vom Herrn Grafen v. Hoffmannsegg eingegangen.

One male (T), one female (T), under a yellow drawer-label, unlike the others and with no border, "*A. guttata* Mus. Berol. Java d.

Hffmsgg." in Hagen's hand, while "magnus Rb." in another hand is inserted after "Mus. Berol.", at Halle; the male with no pin-label, the female with a pink pin-label "10". I believe them to be the types. The female has "cerci in nostro specimine desunt." Hagen says (Verhdl. z.-b. Gesell. Wien 1867, p. 39 *et seq.*) of *guttatus* Burm. "Die Typen in der Hallenser Sammlung aus Java von Hoffmansegg habe ich 1861 verglichen, mir aber nichts darüber bemerkt. Dagegen habe ich in Sommer's Sammlung in Altona 1849 ein Männchen aus Java von Burmeister als *A. guttatus* bezettelt genau untersucht, mit Rambur's Beschreibung verglichen und mir darüber folgendes vermerkt:

. Dies Männchen ist ohne Zweifel *A. magnus* Rambur
. Ausser den erwähnten Stücken habe ich im Berliner Museum ein Weibchen aus Java gesehen, von Hoffmansegg als *A. guttatus* eingesandt, also zweifellos mit Burmeister's Type identisch. Etwas näheres über dasselbe habe ich nicht vermerkt, es muss also in keiner Weise von der damals kurz zuvor verglichenen Type Sommer's und Rambur's Beschreibung abgewichen haben."

15. **Aeschna ephippigera** B. P. 840. [*Hemianax*.]

♂. Von Madras; ein schönes Exemplar in der Hallenser Sammlung aus der Sendung des Herrn King an den vormaligen Missionär Hr. Schmidt.

One male (T) under the yellow drawer-label "ephippigera Burm. mediterr. Sel. senegal. Rb. Madr. Kg." in Prof. E. L. Taschenberg's hand, at Halle; no pin-label.

Hagen says (Verhdl. l. c. p. 31) "Nach Vergleich der Type im Museum in Halle ist *Aeschna ephippigera* Burm, identisch mit *Anax mediterraneus* Selys und *Anax senegalensis* Rambur, von welchen Arten mir gleichfalls Typen vorliegen."

16. **Aeschna jaspidea** M[us]. B[erol]. B. P. 840. [*Anaciaeschna*.]

♀. Aus Java, unter obigem Namen vom Herrn Grafen v. Hoffmannsegg.

Two females (T) under the yellow drawer-label, without border, "A. jaspidea M B. c. var. Java d. Hoffmgg." in Hagen's hand, at Halle; with pink pin-labels, one "11", the other "13".

Hagen says (Verhdl. l. c. p. 33) of *jaspideus* Burm "Meine Beschreibung ist 1849 nach einem Stücke des Berliner Museums, vom Grafen v. Hoffmannsegg mitgetheilt, gefertigt. Selbes ist zweifellos identisch mit Burmeister's gleichfalls von Hoffmansegg mitgetheilte Type im Museum zu Halle, die ich 1861 verglichen habe."

17. **Aeschna dorsalis** B. P. 840. [*Anax*.]

♀. Vom Vorgebirge der guten Hoffnung, in Sommer's und v. Winthem's Sammlung.

I have not found the type.

Hagen says (Verhdl. *l. c.* p. 37) of this species: "Die Beschreibung ist nach Burmeister's Type einem Weibchen in Sommer's Sammlung entworfen. In Winthem's Sammlung fehlte sie, obwohl sie Burmeister auch hier angibt. Wahrscheinlich ist letztere Angabe eine Irrthum, wenigstens passt Burmeister's Angabe *appendicibus truncatis* auf Sommer's Type, bei welcher die Spitze eines Appendix deutlich abgebrochen ist."

18. **Aeschna junia** Drury. P. 841. [*Anax*.]

♂. Aus Nordamerika; in Germar's Sammlung.

One male in the M. C. Z. with the green pin-label "collect Germar junia B. Typus Burm. II. 841. 18. Kentucky", of which the words "collect. Germar Typus Burm. II. 841. 18." are in Hagen's hand. Hagen says (Verhdl. *l. c.* p. 33), "Ich habe die Typen von *A. Junia* Burm. und *A. spiniferus* Rbr. verglichen; sie sind sicher identisch; auch ihre Identität mit Drury's und Say's Art dürfte zweifellos sein."

19. **Aeschna amazili** B. P. 841. [*Anax*.]

Aus Südamerika, beide Geschlechter in Sommer's Sammlung.

I have not found the types. Hagen's copy of B. has * —, but there is no Burmeister specimen in the M. C. Z.

Hagen gives a description of this species (Verhdl. *l. c.* p. 38) stating that "Die nachfolgende Beschreibung ist nach den Typen in Sommer's Sammlung 1849 gefertigt. Beide Geschlechter sind von Beschke bei Rio gefangen."

20. **Aeschna papuensis** B. P. 841. [*Hemianax*.]

♂. Neu-Holland, in Sommer's Sammlung.

I have not found the type.

Hagen says (Verhdl. *l. c.* p. 33) "Nach Vergleich der Type kann ich die Identität dieser Art mit *A. congener* Rambur versichern."

5. Gatt[ung] **Epophthalmia** Burmeister, p. 844.1. **Epophthalmia vittata** B. P. 845. [*Epophthalmia*.]

♂. Von Madras; aus der Sendung des Herrn King an den vormaligen Missionär Herrn Schmidt erhielt das Hallenser Museum diese höchst ausgezeichnete Art.

One *female* (♀) under the yellow drawer-label "vittata Burm. Madras Kg." in B.'s hand, at Halle; no pin-label. The difference

in sex, as stated in my notes, did not attract my attention until I was preparing this manuscript for the printer. I do not know whether the error is B.'s or mine. Hagen, indeed, says: (Verhdl. l. c. p. 59) "E. vittata Burm. Ich habe die Type ein Männchen aus Madras genau beschrieben" etc.

2. **Epophthalmia cinnamomea** B. P. 845. [*Didymops transversa* Say.]
♀. Aus Carolina; von Zimmermann.

One female (T) under the pink drawer-label "cinnamomea Burm. Carol. Zm." in B.'s hand, at Halle; no pin-label.

3. **Epophthalmia eustalacta** B. P. 845. [*Synthemis*.]
♂. Aus Neu-Holland, in Germar's Sammlung.

In the M. C. Z., one male with a dark lavender pin-label "Collect. Germar eustalacta B. Typus Burm II 845. 3 Nov. Holl.", the words 'Collect. Germar' 'Typus Burm II 845.3' in Hagen's hand, and a pink pin-label "Synth. eustalacta B. ♂" in de Selys' hand.

In his 'Synopsis des Cordulines', de Selys gives the dimensions of *Synthemis eustalacta* Burm. ♂ as abdomen 29 mm., aile inférieure 32 (Bull. Acad. Belg.—2—xxxi, p. 562); in the first Additions thereto he states "N. B. Dans le Synopsis il y a interversion de dimensions pour le male. Il faut lire: Abdomen 32 mm. et aile inférieure 29." (l. c. xxxvii, p. 31). Having measured the type male I find the abdomen to be 38 mm., hind wing 32.

4. **Epophthalmia flavo-maculata** Vander Linden. P. 846. [*Somatochlora*.]

Beide Geschlechter bei Halle und Berlin.

One male, one female, under the white drawer label "flavomaculata Charp. Lib. fl. Halæ Bhle." in B.'s hand, at Halle; no pin-labels.

5. **Epophthalmia metallica** Vander Linden. P. 846. [*Somatochlora*.]
Auch bei Halle, wie an mehreren Stellen Deutschlands.

One female under the white drawer-label "metallica Charp. Berol." in B.'s hand, at Halle; no pin-label.

6. **Epophthalmia ænea** L. P. 846. [*Cordulia*.]
Gemein in ganz Europa.

One male, one female, under the white drawer-label "ænea * Lib. ænea Fabr. Cord. Curt. 616 Halæ" in B.'s hand, at Halle; no pin-labels.

7. **Epophthalmia lateralis** B. P. 847. [*Tetragoneuria cynosura* Say.]
corpore fusco-æneo, albide piloso; fronte ore femoribus anticis
maculisque abdominalibus fulvis. Long. 14".

♂. cercis elongatis clavatis, extus curvatis. ♀. non vidi.

Von Philadelphia; in v. Winthem's Sammlung.

In the M. C. Z., one male with the written pin-label "*Chlorosoma lateralis* Burm. * Philadelphia", and the printed label "Winthem". Hagen refers to "the type of *C. lateralis* Burm., now in my collection," in Proc. Bost. Soc. Nat. Hist. xv, p. 270.

The type has a small rounded spot on the superior surface of the frons (continuous with the black stripe in front of the vertex) lying in the median groove. no teeth on the superior appendages, front wings unspotted. Hind wings with brown markings: a basal streak in costal and subcostal spaces to the first antenodal and in the median and submedian spaces not quite half as far, small streaks on the second antenodal and the submedian cross-vein, a spot on the middle of the (2-celled) anal triangle, confluent with a small streak on two adjoining extra-triangular veins.

8. **Epophthalmia albicincta** B. P. 847. [*Somatochlora*.]

♀. Aus Labrador; in Sommer's Sammlung.

In the M. C. Z., a female with the pin-labels "coll. Sömer", "Labrad"; a male with the pin-labels "coll. Sömer", "*C. albicincta* * Burm." — all four labels are in Hagen's hand. As B. specifies only the female, it alone can be the type, although Hagen speaks of "the types of *Cordulia albicincta* Burm." in Proc. Bost. Soc. Nat. Hist. xv, p. 376.

9. **Epophthalmia gracilis** B. P. 847. [*Oxygastra*.]

♂. Vaterland unbekannt, ein Exemplar in v. Winthem's Sammlung.

In the M. C. Z., one male with the written pin-label "*Chlorosoma gracilis* Burm.", the printed label "Winthem", and a dark manilla-paper pin-label "*Oxygastra gracilis* B. ♂" in de Selys' hand.

In his description of *O. gracilis* Burm., de Selys says (Bull. Acad. Belg.—2—xxxi, p. 308) "Décrire d'après le mâle type de la collection Winthem (coll. Hagen)."

The habitat of this species is still unknown. Karsch has discussed its relationship in Ent. Nach. xvii, p. 29, 1891, but I did not have this reference when studying the type.

6. Gatt[ung]. *Libellula*, p. 847.

1. **Libellula venosa** B. P. 848. [*Dasythemis*.]

fusca, fronte ore pectore femoribusque in basi pallidis; abdomine pruinoso; venis alarum omnibus infuscatis, stigmatibus elongatis fuscis. Long. 1".

Von Bahia; in v. Winthem's Sammlung.

One female in the M. C. Z. with the written pin-label "*L. venosa*

Burm. * Bahia'', and the printed pin-label "Winthem''. A description follows:

♀ type. Face and lips luteous, frons and vertex darker and with a slight metallic-blue reflection. Vertex low, its upper margin, viewed from in front, equally 3-sided. Eyes in contact for a distance equal to the length of the dark brown occiput. Rear of head dark brown with some paler spots. Prothorax dark brown, front lobe with a yellow spot on the middle of its anterior margin, hind lobe narrower than the other lobes, nearly semicircular in shape, its hind margin entire. Thorax and abdomen blackish, pruinose, some yellowish spots at the bases of the legs. Legs blackish (third pair missing), femora inferiorly luteous. Tenth abdominal segment produced backward ventrally so as to be three times as long as dorsally, and thus underlying the "anal tubercle." Sternum of 9 also produced backward, underlying 10 in part and terminating in a rounded free margin bearing a transverse row of long bristles (Pl. I, fig. 7). Abdominal appendages one-half as long as 9, two and a half times as long as dorsal surface of 10, straight, simple, black. Vulvar lamina produced slightly beyond 8, its apex bilobed, lobes short, separated by an interval greater than the width of one of them, tips rounded. Ventral surface of 9 with two slender appendages.

Wings with most of the veins (which are themselves blackish) bordered on either side with yellowish brown, more especially at the apices and near the costal margins. Pterostigma dark reddish brown surmounting $2+3$ cells. Membranule absent on the front wings, extremely small, grey, on the hind wings. Arculus slightly beyond the second antenodal, its sectors stalked, nodal sector not waved, supplementary sector next below the subnodal separated from it by but one row of cells, no hypertrigonals, all discoidal triangles free, one submedian cross-vein.

Front wings: 10 antenodals, the last one continuous, 9 postnodals, submedian cross-vein slightly farther than is the level of the first antenodal, internal triangle free, anterior side of discoidal triangle slightly broken so that the outer limb is one-fourth as long as the inner (proximal); one row of posttriangular cells to the level of the origin of the subnodal sector, then two rows nearly to the wing-margin, increasing to 3 marginal cells; superior sector of the triangle arising on the outer side thereof a little farther forward than its posterior angle.

Hind wings: 8 (left) 9 (right) antenodals, 9 (right) 8 (left) postnodals, submedian cross-vein nearer the base than is the first antenodal, discoidal triangle unbroken, sectors of triangle widely separated at their origins, two (right) or one (left) posttriangular cells between short sector and first sector of the triangle, increasing to 9 marginal cells.

Total length 33 mm., abdomen 23, front wing 27, hind wing 26, pterostigma 3.

Venosa is to be referred to the genus *Dasythemis* Karsch, from the generic description of which (Ent. Nach. xv, pp. 249, 251, 1889) it differs slightly as follows: The outer limb (äusserer Schenkel) of the broken anterior side of the triangle of the front wings is apparently relatively shorter as compared with the inner limb, the posttriangular cells (Diskoidalfelde) are regular, the triangle of the hind wings is normal, three-sided, instead of "durch Abstumpfung des äussern Winkels ebenfalls vierseitig'', the hind lobe

of the prothorax of *Dasythemis* is said to be moderately large, heart shaped.

That these differences are not important—unless it be that as regards the prothorax—is shown by the fact that a male in the Mus. Comp. Zool., with the printed label “Mus. Berol.” and the written label “liriope Bresil” in Hagen’s handwriting, agreeing in all other particulars with *Dasythemis liriope* Karsch (*l. c.* p. 252) shows the same differences from the generic description of *Dasythemis* as does the above described *venosa* ♀. This ♂ *liriope* is the species quoted by Hagen, without description, as *Dythemis liriope* Hagen in Syn. Neur. N. Amer. p. 317, 1861, and Proc. Bost. Soc. Nat. Hist. xviii, p. 87, 1875. It seems to have preserved its colors better than the individuals described by Dr. Karsch. A description of thorax and abdomen is therefore added.

***Dasythemis liriope* Karsch** ♂. Thoracic dorsum dark reddish brown, a narrow antehumeral stripe, not reaching upward more than half way to the wing-base, and a sinuous humeral line, greenish yellow. The reddish brown following this humeral line reaches half way to the spiracle and is followed by an oblique, yellowish band whose posterior edge almost reaches the spiracle, metepisternum brown, metepimeron and pectus pale obscure greenish. Wing bases and interalar pieces pruinose. Abdominal segments 1 and 2 pruinose above, yellowish beneath; 3-8 red above, with the articulations and the apex on either side black; 9 and 10 black. Superior appendages black, as long as 9, curved downward in the basal half, slightly upward in the apical half, in the third fourth with an inferior row of 4 denticles, apex acute. Inferior appendage black, about one-fifth shorter, apex blunt, ending in the usual two upturned denticles.

Another ♂ in the M. C. Z., marked “Rio Janeiro”, is also of this species; the genitalia of the second abdominal segment are more easily examined in this individual. Except when the penis is protruded, as is the case with the preceding ♂, the genitalia cannot be called “stark vorragend”. The hamule is slightly more prominent, is bifid, the inner branch the more slender; anterior lamina inconspicuous, entire; genital lobe widened and rounded at the tip.

Abdomen 22-23 mm., hind wing 25-26, pterostigma 2.75-3.

***D. liriope* ♀**. A female in the M. C. Z. from Winthem’s collection and marked “Bahia” may be the other sex of *liriope*. It seems to be not fully colored, the markings of head and thorax being as described for the ♂ but paler throughout; the metallic blue of the frons being barely suggested. Abdominal segments 1-3 luteous, 3 with a dark brown spot each side at apex; 4-8 with a wide, dark brown stripe each side from base to apex, leaving a narrow, middle stripe and a spot each side luteous; 9 and 10 dark brown; 10 prolonged backward so as to be four times longer ventrally than dorsally; sternum of 9 likewise produced backward, terminating in a free rounded margin provided with a transverse row of bristles. Vulvar lamina not produced nor bilobed. A pair of slender, ventral palp-like organs on 9. Appendages of 10 similar to those of *venosa*. Wings smoky yellowish throughout, more intense at the bases and along the anterior margins, pale brownish just below the nodus, and somewhat darker

brown for the entire width of the wing, beginning at the level of the last antenodal and extending to the apex, centres of many of the cells clearer. Pterostigma ochre brown, surmounting two cells and parts of two others.

Front wings: 11 antenodals, 8 postnodals; posttriangular cells two, one, then two rows to beyond the level of the nodus and 4-5 marginal cells. Hind wings: 8-9 antenodals, 8 postnodals, extreme outer angle of the triangle very obliquely truncated. One row of posttriangular cells increasing between short sector and first sector of the triangle. Other neuration details as given for *venosa*.

Abdomen 24, hind wing 27.5, pterostigma 3.

Differing from *venosa* chiefly in the coloration of the wing.

The peculiar structure of the 9th and 10th segments in this female and in that of *venosa* is doubtless a character of generic importance.

2. ***Libellula pulchella*** B. P. 849. [*Celithemis ornata* Ramb.]

Von Savannah; in v. Winthem's Sammlung.

In the M. C. Z. one female with the written pin-labels "L. pulchella Burm. * Savannah", and "L. amanda Hag. L. pulchella Burm. *," the latter in Hagen's hand, and the printed pin-label "Winthem".

Writing of *Celithemis amanda* Hagen says (Psyche v, p. 384, 1890) "I have in my Synopsis (1861, p. 183) described this species after the type (♀) of Burmeister from Georgia (his *Libellula pulchella*, a name used long before)." Following a suggestion of Hagen's I have included this species in *Celithemis ornata* Rambur (Trans. Am. Ent. Soc. xx, p. 261, 1893).

3. ***Libellula pleurosticta*** B. P. 849. [*Macrothemis*.]

Aus Brasilien; in v. Winthem's Sammlung.

In the M. C. Z. one male with the written pin-label "pleurosticta Br. * Brasilia", and the printed pin-label "Winthem".

Describing *Macrothemis pleurosticta* Hagen says "Mir liegt nur ein Männchen aus Brasilien vor, Burmeister's Type aus Winthems, jetzt in meiner Sammlung" (Stet. Ent. Zeit. xxix, p. 286, 1868).

A detailed description of this type and of that of *hemichlora* is given in a paper on *Macrothemis*, in the current volume of the Proceedings of the Boston Society of Natural History, xxviii, pp. 324, 330.

4. ***Libellula hemichlora*** B. P. 849. [*Macrothemis*.]

Aus Brasilien; in v. Winthem's Sammlung.

In the M. C. Z. one female with the written pin-label "hemichlora Burm. * Bahia" and the printed pin-label "Winthem". A second female has the written pin-label "Bahia" and the printed pin-label

"Winthem"; it may or may not have been seen by B. See also the note under No. 3.

5. **Libellula tessellata** B. P. 849. [*Macrothemis* ?]

Aus Brasilien; in Sommer's Sammlung.

I have not seen the type, which (a single individual) is in the Hofmuseum at Vienna, according to Prof. Brauer.†

Specimens identified, although not labeled, by Dr. Hagen as of this species are in the M. C. Z., and they are described in the paper mentioned under No. 3, page 321.

6. **Libellula hæmatodes** B. P. 849. [*Sympetrum*.]

obscure-sanguinea, thorace subtus testaceo; alarum venis sanguineis, stigmatibus et posticarum basi fulvis. Long. 1½".

Aus Neu-Holland, ein Männchen in Germar's Sammlung; unmittelbar an der Hypotenuse liegen drei Zellen.

Belongs to the group Mit zwei Zellenreihen hinter dem Dreieck der Vorderflügel, das Dreieck klein, ohne Querader, die Flügelzellen gross.

One male below the purple drawer-label "hæmatodes Burm. Holl. nov." in B.'s hand, at Halle; no pin-labels. I would have had no doubt that this was the type, were it not that the triangle of the front wings has one cross vein. Can B. have made a mistake and wrongly placed *hæmatodes* in this group?

A description follows:

♂ type? Vertex, frons, clypeus, labrum and occiput bright red. Vertex bifid at tip. Eyes in contact for a distance less than the antero-posterior dimension of occiput. Labium and rear of head luteous.

Prothorax luteous. Hind lobe red, as wide as any other prothoracic lobe, distinctly bilobed.

Dorsum of thorax red, sides and pectus luteous: upper ends of humeral and second lateral sutures with a narrow black line each.

Feet reddish-luteous, femora with a superior dark line, double on the third; third tibiæ with 12 anterior, 16 posterior slender spines.

Abdomen, viewed from above, tapering very gradually from base to apex, bright red above, inclining towards luteous below, unspotted except for a double basal black spot on 1.

Superior appendages as long as 8, longer than 9 or 10, red, almost straight, apex acute, third fourth with an inferior row of about 8 denticles arranged in a curved line whose convexity is outwards (viewed from below). Inferior appendage about one-fifth shorter than superiors, luteous, triangular.

Genitalia of 2 not prominent. Anterior lamina less prominent than hamule and the latter than genital lobe. Anterior lamina somewhat bilobed at tip. Hamule bifid in its apical half, branches equal, inner branch slender, hook-like,

† Letter of July 15, 1898.

apex acute; outer branch thrice thicker, lamellate, straight, apex more obtuse. Genital lobe of about equal width throughout, apex rounded.

Wings:—reticulation reddish; pterostigma luteous, surmounting parts of two cells; membranule small, cinereous. One submedian cross-vein nearer the base than is the first antenodal; upper end of arcus between first and second antenodals, its sectors stalked; nodal sector not waved, one row of cells between the subnodal and the next supplementary sector below, no hypertrigonals.

Front wings:—10 antenodals, last not continued to median vein, 6 postnodals, internal triangle 3-celled, discoidal triangle with one cross-vein, followed by three posttriangular cells, then two rows for three cells to the level of separation of principal and median sectors, then three rows, afterwards increasing to 6 marginal cells. [N. B. Greater part of left front wing wanting.] Merest trace of yellow at the base.

Hind wings: 6 (right) 7 (left) antenodals, 6 (right) 7 (left) postnodals, no internal triangle, discoidal triangle free, its basal side in prolongation of the arcus. Between the short sector and the first sector of the triangle:—2 posttriangular cells, then 1 cell, then two rows increasing; sectors of the triangle separated at origin. Pale yellow at the base reaching out to the submedian cross-vein for the whole width of the wing.

Total length 34.5 mm., Abdomen 22. Superior appendages 1.5, the third tibiæ 5, front wing 30, hind wing 28, pterostigma 3.5.

Mr. Kirby (Cat. Odon. p. 22, 1890) has placed *haematodes* under *Crocotthemis*, but the prothorax, with the neuriation, indicates it to be a *Sympetrum* Newm. (*Diplax* Charp.). To the same genus belong also *Diplax pacificus* Kirby, later placed by him in *Trithemis*, and *Tri. rubra* Kirby, and these two may perhaps be nothing more than small individuals of *haematodes*.

7. *Libellula histrio* B. P. 849. [*Micrathyria berenice* Drury.]

Von New-York; in v. Winthem's Sammlung.

In the M. C. Z. one female with the written pin-label "L. histrio * Burm. New York", and the printed pin-label "Winthem".

8. *Libellula leucosticta* B. P. 849. [*Cucergates*.]

Vom Port natal; aus der Sendung des Herrn Dregé; auch in Aegypten und Senegambien (v. Winthem's Sammlung).

One male (T) under the blue drawer-label "leucosticta Burm. Port. nat. Drg." in B.'s hand, at Halle; no pin-label other than a bit of unmarked blue paper.

In the M. C. Z.: one male with the written pin-label "albisticta Br. Senegal", and the printed pin-label "Winthem"; one male with the written pin-label "Senegal", and the printed pin-label "Winthem"; one male with the printed pin-label "Winthem".

9. **Libellula imbuta** Hoffm [annse]gg [MS.], B. P. 850. [*Uracis*.]

Von Bahia, auch aus Surinam; gemein.

One male and one female, in the M. C. Z., each with the written pin-label "Bahia", and the printed pin-label "Winthem", may be types.

The male lacks the last six abdominal segments. In both ♂ and ♀ the brown at the apex of the wings begins on the front wings slightly proximal to the middle point of the pterostigma (and is 3.5 ♀, 3 ♂ mm. long), on the hind wings slightly distal to that point (2.5 ♀ 2 ♂ mm. long); there are no hypertrigonals on the front wings ♂ ♀, nor on the hind wings of the ♂, but there is a single hypertrigonal on both hind wings of the ♀; discoidal triangles of all wings ♂ ♀ with one cross-vein: front wings ♂ ♀ with one submedian cross-vein and the internal triangle of 3-cells. Hind wings ♂ ♀ with three submedian cross-veins (four on right hind wing of the ♀), but no internal triangle.

Total length ♂—♀ 33, Abdomen ♂ —, ♀ 22, front wing ♂ 27 ♀ 29, hind wing ♂ 26 ♀ 28, pterostigma (f. w.) ♂ 4. ♀ 4.

This species is the type of the genus *Uracis* Rambur. See Mr. Kirby's notes on variation in neuration (Ann. Mag. Nat. Hist.—6—xix, p. 605, 1897).

10. **Libellula fastigiata** B. P. 850. [*Uracis*.]

Von Bahia.

In the M. C. Z. one male with the written pin-label "L. fastigiata Burm. Bahia", and the printed pin-label "Winthem".

♂ type. The brown at the apex of the wings begins at the inner (proximal) end of the pterostigma and attains a length of 7 mm. (front) or 6 mm. (hind wings). One hypertrigonal on all the wings, all discoidal triangles with one cross-vein; front wings with five (right) four (left) submedian cross-veins, internal triangle two-celled (left), three-celled and irregular (right); hind wings with three (right) four (left) submedian cross-veins but not forming an internal triangle.

Total length 39 mm., abdomen 27, front wing 35, hind wing 33.5, pterostigma (f. w.) 5.

11. **Libellula lateralis** B. P. 850. [*Trithemis*.]

griseo-testacea, temporibus thoracisque lateribus nigro-variegatis; abdominis margine laterali apiceque nigro; alis subfumatis, posticis in basi fulvis, stigmatibus nigris. Long. 1½"

Von der Comorischen Insel St. Johanna: mehrere Weibchen in Sommer's Sammlung.

Belongs to the group Mit drei Zellenreihen hinter dem Dreieck der Vorderflügel, welche bis über die Mitte des ganzen Feldes hinausgehen and Flügelmahl wohl 4-5 mal so lang wie breit.

One female under the blue drawer-label "lateralis Burm. Ins. Com. Sm." in B.'s hand, at Halle; no pin-label.

One female, in the M. C. Z., with written pin-label "L. lateralis Burm. * coll. Somer. Comor. Insel St. Juan" in Hagen's hand.

The following description is based on these two types; they differ slightly from each other; the M. C. Z. type is the larger.

♀ types. Vertex luteous, apex truncated. Face and lips yellow, a narrow black band on frons superiorly in front of vertex and eyes; inner margin of lateral labial lobes and a narrow median stripe on the median labial lobe blackish. Rear of eyes yellow with two black spots. Occiput luteous. Distance in which the eyes are in contact equal to the median, antero-posterior dimension of occiput.

Prothorax blackish, some yellow spots on either side above the bases of the first legs. Hind lobe quite small, smaller than the other lobes, hind margin entire.

Thorax luteous above, becoming yellowish on the sides below and on the pectus; the upper and lower ends only of the humeral suture, an oblique stripe on the lower part of the mesepimeron, a stripe on the site of the (obliterated) first lateral suture (not reaching the wing base however), a stripe on the second lateral suture, a stripe along the median side of the latero-ventral metathoracic carina, uniting with the preceding below and on the pectus with its fellow of the other side.—blackish.

Feet blackish; coxæ, trochanters, first and second femora inferiorly yellowish; third tibiæ with 12-14 anterior (external) 13-15 posterior (internal) slender spines.

Abdomen luteous; sutures, transverse carinæ (one supplementary transverse carina on both 2 and 3) a narrow mid-dorsal and two lateral longitudinal stripes on 2-3, lateral margins of 3-7, 8-10 entirely (except two small, basal, luteous spots on 8)—blackish.

Appendages blackish, longer than 10. Vulvar lamina neither produced nor excavated.

Wings slightly smoky. Pterostigma blackish-brown, surmounting one and parts of two other cells. Membranule small, pale. One submedian cross-vein nearer the base than is the first antenodal, upper end of the arculus between first and second antenodals, sectors of the arculus stalked, nodal sector not waved, no hypertrigonals, one to three double cells between subnodal and next supplementary sector below.

Front wings: 11-12 antenodals, last not continued to median vein; 8 postnodals; internal triangle 3-celled, discoidal triangle with one cross-vein; 3 post-triangular rows to beyond the level of the nodus. A faint yellowish, basal tinge reaching to the apex of the submedian space (Halle type), or confined to the extreme base of the wing (M. C. Z. type).

Hind wings: 8-9 antenodals, 9 (right) 10 (left) postnodals, no internal triangle, discoidal triangle free, its inner side barely nearer the base than the arculus is, two posttriangular rows increasing, sectors of the triangle barely (Halle type), or distinctly (M. C. Z. type) separated at origin. Faint yellowish basal tinge reaching outward to the triangle (Halle type), or to the level of the first antenodal, and backward to two cells beyond the apex of the membranule (M. C. Z. type).

Total length 30-34.5 mm., abdomen 20-23, third tibia 4.5-5, front wing 26-28.5, hind wing 25-28, pterostigma 3, abdominal appendages .75.

Are the females of *L. hæmatina* from Mauritius, Bourbon and Madagascar described by Rambur (Nèvr. p. 85) this species?

As above indicated *lateralis* is not an *Orthetrum*, as given in Mr. Kirby's Catalogue, page 38.

12. **Libellula longipennis** B. P. 850. [*Pachydiplax*.]

Von Mexico; ein Weibchen in Germar's Sammlung.

One female (T) under the green drawer label "longipennis Burm. Mexico" in B.'s hand, at Halle; no pin-label.

13. **Libellula stictica** B. P. 850. [*Trithemis*.]

nigra, fronte flava, summa cum tuberculo ocellari chalybæa; thorace flavo-guttato, supra pruinoso; abdominis segmentis lineola duplici flava; alis totis aqueis, stigmatibus nigris. Long. $1\frac{1}{2}$ ".

Vom Port natal; ein Männchen aus der Sammlung des Hrn. Dregé.

One male (T) under the blue drawer-label "stictica Burm. Port. Nat. Drg." in B.'s hand, at Halle; no pin-label other than a bit of unmarked blue paper. A description follows:

♂ type. Vertex (artificially flattened) and upper surface of frons dark metallic blue. Remainder of frons, clypeus, lips and rear of eyes and of occiput yellow; margins of labrum and a median labral band, the median labial lobe, the inner third of the lateral labial lobes, two spots on the rear of the eyes and upper surface of the occiput—black. Eyes in contact for a distance little more than the antero-posterior dimension of occiput.

Prothorax black, its hind lobe very small.

Thoracic dorsum and sides superiorly pruinose; below yellow, with black stripes on the lower ends of the humeral, the (obliterated) first, and the second lateral sutures; the stripe on the last uniting on the pectus with its fellow of the opposite side.

Feet black, third tibiæ with 12-13 anterior (exterior), 14 posterior (interior) spines.

Abdomen black, with yellow markings as follows—two apical dorsal spots on 2; 3-8 with a longitudinal stripe on each side of dorsum, interrupted by black at the supplementary transverse carina on 3 and at rudiments (?) of the same on 4 and 5; sides of 1-3 except at transverse carinæ. The abdomen, when viewed from above, is slightly constricted at the base of 4, widening somewhat to the apex of 7, narrowing to 10.

Superior appendages as long as 9, black, apex fairly acute, a row of denticles on the under surface. Inferior appendage almost as long, rather stout, apex obtuse.

Genitalia of 2:—anterior lamina not prominent, its margin entire: hamule and genital lobe much more prominent. Hamule bifid, inner branch slenderer, slightly longer, curved backward to form a hook; outer branch straight, thrice broader, apex obtusely rounded. Genital lobe about as prominent as the inner hamular branch, longer (dorso-ventrally) than wide (antero-posteriorly), narrowing towards its apex (Pl. I, fig. 6).

Wings:—Pterostigma blackish brown, surmounting one and parts of two other cells, membranule small, blackish; one submedian cross-vein, nearer the base than is the first antenodal; upper end of the arculus between first and second antenodals; sectors of the arculus stalked; no hypertrigonals; nodal sector not waved; two to three double cells between the subnodal sector and the next following supplementary sector. Wings uncolored.

Front wings:—9 antenodals, the last one not continued to the median vein; 7

postnodals: internal triangle 3-celled, discoidal triangle with one cross-vein; three posttriangular rows to the hind margin of the wing.

Hind wings:—7 antenodals, 8 postnodals, no internal triangle, discoidal triangle free, two posttriangular rows increasing, sectors of the triangle arising from the same point.

Total length 33 mm., abdomen 23, superior appendages 2, third tibia 5.5, front wing 28, hind wing 27, pterostigma 3.5.

14. **Libellula arteriosa** B. P. 850. [*Trithemis*.]

testaceo-rufa, abdomine et fronte summa sanguineis, alis hyalinis in basi fulvis, venis omnibus sanguineis, stigmatibus fuscis. Long. 1 $\frac{1}{8}$ ". Vom Port natal; ein Männchen, ebendaher.

One male (♂) under the blue drawer-label "*arteriosa* Burm. Pr. b. sp. Drg." in B.'s hand, at Halle; no pin-label other than a bit of unmarked blue paper. The following notes were made on the type:

♂ (type). The fulvous coloring on the wing-bases is, on the front wings, confined to the subcostal and submedian spaces, reaching not as far as the first antenodal and the submedian cross-vein respectively. On the hind wings, it reaches in the costal and median spaces half-way to the first antenodal, in the subcostal and submedian spaces to slightly beyond the first antenodal; in the submedian space it therefore reaches to beyond the cross-vein; below (posterior to) the submedian space it reaches only as far as the apex of the membranule and outwards for but two cells from the membranule. The black on the labrum is confined to the middle of the anterior margin. The genital hamule is much more like the figure I have given (Proc. U. S. Nat. Mus. xvi, p. 585, 1893) of the hamule of *rubrinervis* Selys than Dr. Karsch's figure of that of *arteriosa* (in Berl. Ent. Zeit. xxxix, p. 12, 1894). Abdomen 24 mm., hind wing 27.

When at Halle I had with me a male from Ndi, Zanzibar, by Hildebrandt, given me, as *arteriosa*, at the Museum für Naturkunde in Berlin; I noted at the time that the type of *arteriosa* agrees with this male in other respects than those mentioned above. This male is now before me. It is slightly smaller—abdomen 22, hind wing 25; the brownish yellow at the base of the front wings reaches to the second antenodal and the arculus and even a short distance beyond the latter in the submedian space; on the hind wings the same coloring reaches to the third antenodal and the triangle, and from the anterior margin of the wing almost to the posterior; black is the predominant color on the labrum, only two isolated basal fulvous spots remaining; the hamule agrees with the figure of that of *rubrinervis* cited above. With this male from Zanzibar agrees a male from Nossibé given to me subsequently by Baron de Selys as *arteriosa*.

15. **Libellula rufinervis** B. P. 850. [*Dythemis*.]

Von St. Domingo, in Sommer's Sammlung.

I have not seen the type which is in the Hofmuseum at Vienna (Prof. Brauer).

16. **Libellula pedemontana** Fab. P. 851. [*Sympetrum* Newm., *Diplaz* Charp.]

Im südlichen Europa.

Three males, two females, under the white drawer-label "pedemontana Fabr. Charp. Gallia v. W." in B.'s hand, at Halle; no pin-labels. One male in the M. C. Z. with the written pin-label "Coll. Germar pedemontana Fabr. Type Burm. Austria" in Hagen's hand; Hagen's copy of B. has no * before the name of this species.

Following the last-quoted sentence from *Burmeister* is this one:

Hierher noch *L. trivirgata* M. B. in litt. und wahrscheinlich auch *Lib. braminea* Fabr. suppl. 284.

One female under the yellow drawer-label "trivirgata M. B. Java. Hoffmgg." in B.'s hand, at Halle; no pin label. No description of *trivirgata*, however, seems ever to have been published.

17. **Libellula vulgata** Linn. P. 851. [*Sympetrum*.]

Überall gemein.

Two females under the white drawer-label "vulgata Lin. Fabr. Charp. Europa omnis" in B.'s hand, at Halle; no pin-labels.

18. **Libellula flaveola** Linn. P. 851. [*Sympetrum*.]

Gemein in ganz Europa.

One male, two females, under the white drawer-label "flaveola Lin. Fabr. Charp. Europa omnis" in B.'s hand, at Halle; no pin-labels.

19. **Libellula albifrons** B. P. 851. [*Leucorhinia*.]

Bei Berlin, auch aus der Schweiz.

One male (†) under the white drawer-label "albifrons Burm. Berolini" in B.'s hand, at Halle; no pin-label. One male in the M. C. Z. with the written pin-label "Coll. Germar. mesoleuca Imh. albifrons B. Helvetia"; the words "Coll. Germar" are in Hagen's hand. Hagen's copy of B. has no * before this name.

The following note is from p. 61 of De Selys and Hagen's *Revue des Odonates de l'Europe* (1850): "M. Burmeister a sans doute cru que la couleur blanche des appendices anals indiquait une variété, parce qu'il avait vu dans d'autres collections la *dubia* qu'il avait regardée comme la même espèce, mais cet entomologiste et M. Germar se sont assurés depuis que l'individu type dans le musée de Halle, envoyé par M. Imhoff, est bien notre *albifrons* à appendices blancs."

20. **Libellula nigra** Vand. Lind. P. 851. [*Sympetrum scoticum* Donov.]
In Deutschland und Italien.

One male under the white drawer-label "nigra v. Lind. Charp. Sundiae" in B.'s hand, at Halle; no pin-label. One male in the M. C. Z. with the written pin-label "coll. Germar. *nigra* Lind. Veronensis Charp. Sylvatica Hans. Typus Burm."; the words "coll. Germar" and "Typus Burm." are in Hagen's hand.

21. **Libellula pectoralis** Charp. P. 851. [*Leucorhinia*.]

Nicht selten in Deutschland, bei Stralsund, Berlin, Halle; auch in Holland und England.

One male, three females, under the white drawer-label "pectoralis Charp. dubia v. Lind. Europa" in B.'s hand, at Halle; no pin-labels. *Dubia* v. Lind. is distinct.

22. **Libellula Tillarga** Fab. P. 852. [*Tholymis*.]

Von Madras; in v. Winthem's und der Hallenser Sammlung von Hrn. King; auch vom Hrn. Grafen v. Hoffmannsegg als L. versicolora de Haan.

Two males under the yellow drawer-label "Tillarga Fbr. versicolora d. Haan. Java Hoffmg." in B.'s hand, at Halle, no pin-labels. One male in the M. C. Z. with the yellow, written pin-label "coll. Germar Tillarga B. braminea Fabr. versicolora d. H. Java Br. Typus Burm. II 852. 22"; the words "coll. Germar" and "Typus Burm. II 852. 22" are in Hagen's hand.

Expressions used by Hagen (Stet. Ent. Zeit. xxviii, p. 221, 1867) imply that he had studied B.'s type of *Tillarga*.

23. **Libellula analis** (de Haan) B. P. 852. [*Pantala flavescens* F.]

Ebendaher, auch unter dem angeführten Namen von Herrn Grafen v. Hoffmannsegg.

Two males (T) under the yellow drawer label "analis d. Haan Madras King Java Hoffm." in B.'s hand, at Halle; one has a pink pin-label "16", the other none. One male in the M. C. Z. with the yellow, written pin-label "coll. Germar analis d. H. Typus Burm. II. 852. 23. Java Br."; the words "coll. Germar" and "Typus Burm. II. 852. 23." in Hagen's hand.

24. **Libellula terminalis** B. 852. [*Pantala flavescens* F.]

Aus Brasilien, in Sommer's Sammlung.

I have not seen the types which (two individuals) are in the Hofmuseum at Vienna (Prof. Brauer). Hagen's copy of B. has * — before this name, but there is no B. specimen in the M. C. Z.

25. **Libellula basalis** B. P. 852. [*Tramea*.]

Aus Brasilien; in Sommer's Sammlung.

I have not seen the type which is in the Hofmuseum at Vienna (Prof. Brauer).

26. **Libellula carolina** Linn. P. 852. [*Tramea*.]

♂. Aus Nord-Amerika; in Sommer's Sammlung.

I can learn nothing of B.'s specimen.

27. **Libellula chinensis** de Geer. P. 852. [*Tramea*.]

Aus China und Ostindien; die Hallenser Sammlung erhielt ein schönes Weibchen von Hrn. King in Madras.

One female under the yellow drawer-label "*chinensis* De Geer Madras King" in B.'s hand, at Halle; no pin-label. One individual in the Hofmuseum at Vienna (Prof. Brauer).

28. **Libellula Phyllis** Sulzer. P. 853. [*Rhythemis*.]

Aus Java; die Hallenser Sammlung erhielt diese Art vom Hrn. Grafen v. Hoffmannsegg.

Two females under the yellow drawer-label "*Phyllis* Sulz Euphrosyne d. Haan. Java Hoffm." in B.'s hand, at Halle; one has a pink pin-label "21", the other none. Hagen's copy of B. has * — before this name, but there is no B. specimen in the M. C. Z.

29. **Libellula Murcia** Fab. P. 853. [*Rhythemis variegata* L.]

Von Madras, durch Hrn. King.

Two males under the yellow drawer-label "*Murcia* Fabr. Drur. Madras King." in B.'s hand, at Halle; no pin-labels.

Baron de Selys has given reasons for regarding this species—which is properly *Marcia* Drury 1773, not *Murcia* Fabr. 1793—as the male of *variegata* Linn. 1767 (Ann. Mus. Civ. Gen.—2—x, p. 440, 1891).

30. **Libellula Eponina** Drur. P. 853. [*Celithemis*.]

In Nordamerika, mir in natura nicht vorgekommen.

31. **Libellula indica** Linn. P. 853. [*Rhythemis variegata* L.]

In Ostindien; die Hallenser Sammlung erhielt 2 Stück durch Hrn. King vom Missionär Hrn. Schmidt.

Three females under the yellow drawer-label "*indica* Fabr. *variegata* Lin. Arria Drury. Madras King" in B.'s hand, at Halle; no pin-labels.

32. **Libellula Fulvia** Fab. P. 853. [*Neurothemis*.]

In China.

B. mentions no collection and I have seen no specimens of his.

33. **Libellula fluctuans** Fab. P. 853. [*Neurothemis*.]

L. vidua Hagenb. in litt. In Java, vom Herrn Grafen v. Hoffmann-segg.

Two males under the yellow drawer-label "*fluctuans* Fbr. *vidua* Hag. elegans Guer. Java Hoffmgg." in B.'s hand, at Halle; no pin-labels.

34. **Libellula pullata** B. P. 854. [*Diastatops obscura* F. ?]

Aus Surinam; in Sommer's Sammlung.

I have not seen the type which is in the Hofmuseum at Vienna (Prof. Brauer). The species is referred to the genus *Diastatops* Rambur and Mr. Kirby gives some reasons (Ann. Mag. Nat. Hist. —6—xix, p. 602. 1897) for thinking it identical with *D. obscura* Fabr. which follows—

35. **Libellula obscura** Fab. P. 854. [*Diastatops*.]

Von Bahia, in v. Winthem's Sammlung.

One female in the M. C. Z. with the written pin-label "*obscura* Fab. * Bahia" and the printed pin-label "Winthem".

36. **Libellula dimidiata** Fab. P. 854. [*Diastatops*.]

Aus Surinam, in Sommer's und der Hallenser Sammlung.

One male under the green drawer-label "*dimidiata* Fabr. Br. margin. d. Geer. Surin. Smr." in B.'s hand, at Halle; no pin-label. Hagen's copy of B. has * — before this name, but there is no B. specimen in the M. C. Z.

37. **Libellula fasciata** Fab. P. 854. [*Zenithoptera*.]

Von Bahia, in Sommer's Sammlung; wahrscheinlich einerlei mit *L. americana* Fabr. Entom. Syst. II, 380, 31.

I have not seen any B. specimen. Hagen's copy of B. has * — before this name, but although there is an *americana* from Winthem's collection in the M. C. Z., there is apparently no B. specimen there.

38. **Libellula ochracea** B. P. 854. [*Trithemis*.]

flavo-testacea, segmentis abdominalibus utrinque macula fusca; alis in basi late fulvis, stigmatibus elongatis cinereis. Long. 1".

Von Bahia, in v. Winthem's Sammlung.

Two males in the M. C. Z., one with the written pin-label "*L. ochracea* Br. * Bahia"; the other with the written pin-label "*L. ochracea* * Br." in Hagen's hand; both have printed pin-labels "Winthem"; the second male mentioned has lost the abdomen so

that its sex as given, although probable, is not certain. Hagen says (Proc. Bost. Soc. Nat. Hist. xv, p. 375, 1873) "Having before me the type of *D. ochracea* Burm.," etc. A description of these two types follows:

♂ types. Yellow passing into olive on the frons and labrum, into brown on vertex, occiput, thoracic dorsum, and on either side of the apices of abdominal segments 2-10 as a (usually triangular) spot.

Legs luteous, somewhat darker on the anterior surfaces.

Eyes in contact for only about $\frac{1}{4}$ mm., or about one-third the length of the occiput.

Hind lobe of the prothorax smaller than the other lobes, rectangular, with the angles rounded off, its transverse dimension greater than its antero-posterior, hind margin entire.

Superior abdominal appendages as long as 9, luteous, slender and subcylindrical when viewed from above; viewed in profile, arched in their basal half, apical half nearly straight; inferior margin of the third fourth of the appendage with a row of five denticles ending abruptly distally, whence the apex tapers to an acute point. Inferior appendage not more than one-tenth shorter, extending considerably beyond the denticles of the superiors, triangular, rather slender, about one-and-a-half times as long as its greatest width (at the base).

Genitalia of abdominal segment 2 inconspicuous, genital lobe most prominent, hamule bifid at tip, inner branch slender, forming a round hook with a black tip, outer branch longer, three times wider, obliquely truncated with angles rounded off. Genital lobe trapezoidal, its tip truncated so that its anterior margin is about one-and-a-half times as long as its posterior margin.

Wings clear, reticulation reddish at base, elsewhere blackish. Pterostigma ochreous, surmounting one cell and parts of two others. Membranule blackish. Upper end of arculus between first and second antenodals (or at the second, hind-wing of one ♂), its sectors distinctly stalked, separated throughout by one row of cells only (or 2 cells at margin of hind wing 1 ♂), supplementary sector next below the subnodal sector separated from it by one row of cells; one submedian cross-vein, nearer the base than is the level of the first antenodal: nodal sector not waved, separated from the subnodal by one row of cells except at the margin of the wing, no hypertrigonals.

Front wings with 9-10 antenodals, the last not continuous, 7-8 postnodals triangle with one cross-vein, internal triangle of three cells; three posttriangular cells, then two rows to beyond the level of the origin of the subnodal sector (or two rows from the triangle outwards—1 ♂) then three rows almost to the wing margin, with four marginal cells. Yellow at base for the entire width of the wing out to the level of the arculus.

Hind wings with 7-8 antenodals, 8-9 postnodals, triangle free, its proximal side in prolongation of the arculus, no internal triangle; posttriangular cells 2, 1, 2, 2, 3 + . . . 8-9 marginal cells, sectors of triangle united at origin. Yellow at the base for the entire width of the wing to the third antenodal and to the level thereof on front and hind margins respectively, and filling the greater part of the triangle and adjoining cells.

Total length 27, abdomen 17.5, front wing 23-24, hind wing 21.5-23, pterostigma 3.

Mr. Kirby says (Ann. Mag. Nat. Hist.—6—xiv, p. 263, Oct. 1894) "*ochracea*, Burm., should have only two rows of post-triangular cells, instead of one or more rows of three, followed by one or more rows of two increasing, as in typical *Trithemis*". This statement was probably based on Burmeister's placing it in a group having "Gleich anfangs zwei Zellenreihen in dem Felde hinter dem Dreieck der Vorderflügel" (B. p. 854). The same cause probably led Mr. Kirby to refer *ochracea* Hag. (nec. Burm.), *fervida* Erichson and *justina* Selys to *pulla* Burm. The above description of the two types of B. shows, however, that this character is subject to individual variation, as I can find no reason for regarding these two individuals as of different species. The three names quoted are therefore, I believe, to be referred back again to *ochracea* Burm., as they were given by Hagen (Proc. Bost. Soc. Nat. Hist. xviii, p. 81, 1875) and Kirby (Cat. Odon. p. 19, 1890). From the description of *L. pulla* B., given *post*, it will be seen that it closely approaches *ochracea* B. Whether the two are really distinct is a question yet to be decided by a revision of these American species which have been referred to *Trithemis* Brauer.

39. **Libellula castanea** B. P. 854. [*Sympetrum* ?]

castanea, alarum hyalinarum basi umbra *castanea*, posticarum majori; stigmatibus elongatis cinereis. Long. 1" 1½".

Von Bahia. Ebenda.

Two males in the M. C. Z., both with printed pin labels "Win them"; one with the written pin-label "L. castanea Br. ♂ and ♀ * Bahia" (I found no female to which this label refers); the other with the written pin-labels "Brasil" and "L. castanea * Burm.," the last one in Hagen's hand.

A description of the types follows:

♂ (types). Almost entirely reddish-brown, labium and first and second femora darker. Vertex with a very narrow tip, which is bifid. Eyes in contact for a very short distance (one-third to one-fourth of the length of the occiput).

Hind lobe of prothorax almost as wide as the middle lobe, subrectangular with the angles rounded off, hind margin with but the slightest indication of a median notch.

Hind tibia with 8-9 spines on the anterior (outer) row, 8-9 on the posterior (inner).

Superior abdominal appendages as long as 9 + 10, red, curved somewhat downward in the basal half, thickened before the apex, third fourth with an inferior row of six black denticles, after which the appendage, viewed in profile, is truncated obliquely upward and backward to form the moderately acute and slightly upturned apex. Inferior appendage about one-fifth shorter, reaching slightly

beyond the denticles of the superiors, hardly longer than it is wide at base, its tip one-fourth to one-third as wide as base, with the usual two upturned denticles.

Genitalia of abdominal segment 2: Anterior lamina inconspicuous, its margin entire. Apex of hamule bifid, inner branch slender, curved to form a hook, outer branch twice as long and as thick, its tip rounded. Genital lobe a little more prominent than the hamule, about one-and-a-half times as long as wide, tip rounded. (Pl. I, fig. 5).

Wings slightly smoky throughout, reticulation black. Pterostigma reddish-brown, surmounting one cell and parts of two others. Membranule blackish. Upper end of arcus at the second antenodal or slightly nearer, its sectors stalked, nodal sector not waved, supplementary sector next below the subnodal separated from it by but one row of cells. All discoidal triangles with one cross-vein. No hypertrigonals.

Front wings: 12-14 antenodals, the last not continuous, 8-10 postnodals, one submedian cross-vein nearly on a level with the first antenodal, internal triangle of three cells, three posttriangular cells for one cell (two wings) or two cells (two wings) then two rows to the level of the origin of the subnodal sector increasing to six marginal cells. Brownish yellow at base reaching to submedian cross-vein or not quite so far.

Hind wings: 9-10 antenodals, 9-10 postnodals, two submedian cross-veins, two posttriangular rows (between short sector and first sector of triangle) to the level of the separation of the median sector increasing to 9-11 marginal cells sectors of the triangle a little separated at origin. Brownish yellow at base, reaching out to the first antenodal but not attaining the hind margin of the wing by one-fourth of the width of the wing.

Total length 32. Abd. 20. F. W. 28. H. W. 27. Pter. 3. Sup. app. 1.5 hind tibia 5.

The systematic importance of two neurational details which are symmetrically developed on these two types: the hind wings having a cross-vein in the discoidal triangle and two submedian cross-veins, is diminished by the circumstance that in the Mus. Comp. Zool. are two males in which I can discover no specific difference from *castanea*, one of which has the triangles of both hind wings with a cross-vein, one submedian cross-vein on the right side, two on the left, while the other male has these triangles free and but one submedian cross-vein on each side. A third male agrees with *castanea* types in these regards, as does a male in my collection. Of three females in the Mus. C. Z. which seem to belong to this species, one has the triangles free, two have them crossed on both sides, two have two submedian cross-veins on one side only, one has but one submedian cross-vein on each side, a female in my own collection has the triangle free and two submedian cross veins each side—these statements referring to the hind wings only.

40. **Libellula Domitia** Drury. P. 855. [*Perithemis*.]

In Nordamerika und Westindien; in Sommer's Sammlung.

Two males under the green drawer-label "*Domitia* Drur. St. Cruz Smr." in B.'s hand, at Halle, no pin-labels, have on the front wings two posttriangular rows afterwards increasing, although B. places *Domitia* as the first species under a section "Gleich anfangs drei Zellenreihen in dem Felde hinter dem Dreieck der Vorderflügel." One of these males has the internal triangle of the front wings two-celled, the other male has it one celled in front wings; the latter shows a clear, not yellowish, but ill-defined band on all the wings between the triangle and the nodus.

Hagen's copy of B. has * opposite this name, but there is no specimen of *Domitia* from Sommer's collection in the M. C. Z., although there is a Brazilian male from Winthem's there.

I have discussed the question of specific characters based on neu-ration in this genus in a paper soon to be published in the Proceedings of the California Academy of Sciences.

41. **Libellula pulla** B. P. 855. [*Trithemis*.]

alis hyalinis, in basi fusco-fulvis, tessellatis; corpore testaceo-cinereo, frontis macula ocellorumque tuberculo cyaneis. Long. $10\frac{1}{2}$ '''.

Aus Surinam, in Sommer's Sammlung. Diese Art zeichnet sich noch dadurch aus, dass nur in den 2 ersten Querreihen hinter dem Flügeldreieck 3 Zellen liegen, in den 4 folgenden aber 2.

One male (T) below the green drawer-label "*pulla* * Surin. Smr." in B.'s hand, at Halle; no pin-label.

A description follows:

♂ (type). Vertex bifid, metallic blue, as also the frons except for a small yellow spot on either side. Eyes in contact for a distance less than the antero-posterior dimension of the occiput, which is brown above, yellow behind. Clypeus olive, lips yellow, labrum with a median basal brown spot. Rear of the eyes yellow, with a lacerated blackish band on the inner (median) margin.

Hind lobe of the prothorax yellow, subrectangular, with angles rounded, not as wide as the middle lobe, with a median impressed line.

Thorax yellowish with diffuse brown markings on dorsum, perhaps effects of desiccation, and interrupted brown stripes on humeral, (obliterated) first lateral, and second lateral sutures, on mesepimeron and on metepimeron, uniting with each other at the bases of the feet.

Feet dark brown, coxæ, trochanters and inferior surfaces of femora paler. Third tibiæ with 11 anterior (external), 14 posterior (internal) slender spines.

Abdomen tapering very slightly from 2 to 10, yellowish; all carinæ and sutures, the greater part of 4-7 (leaving only a basal yellow spot on either side of dorsum) and 8-9 *entirely*, blackish-brown; 10 and the appendages luteous. Superior appendages as long as 9, with an inferior, angular dilatation at two-thirds

their length, on the basal side of which is a row of 3-4 denticles; apex acute. Inferior appendage but little shorter, triangular, extreme apex truncated, with the usual two upturned denticles.

Genitalia of 2: Anterior lamina hardly projecting beyond the lateral margins of 2. Hamule bifid, inner branch slender, hook-like; outer branch longer, wider, lamellate, apex obliquely truncated from within outward and ventralward. Genital lobe much more prominent than the preceding parts; apex truncated from behind forward and ventralward, wider than the base, and in contact with that of its fellow of the opposite side so that the two genital lobes form a sort of hood for the hamules. (Pl. I, fig. 10).

Wings:—Pterostigma luteous surmounting one and parts of two other cells, membranule cinereous, reticulation blackish. Sectors of the arcus stalked, no hypertrigonals, one submedian cross-vein, nearer the base than is the first antenodal, nodal sector not waved, only one row of cells between the subnodal sector and the supplementary sector next below.

Front wings:—Upper end of arcus between first and second antenodals, 10 antenodals, the last not continued to median vein, 8 postnodals, internal triangle 3-celled, discoidal triangle with one cross-vein; three posttriangular rows for two cells, then two rows for four cells, then three rows (beginning near the level of the last antenodal) almost to the wing-margin; this corresponds to the strongly pronounced curving forward of the first sector of the triangle, which reaches its maximum at the level of the point of separation of the principal and median sectors. Base of the wings yellowish-brown for almost their entire width and reaching outward to the first antenodal, the arcus and the inner (basal) side of the internal triangle.

Hind wings:—Upper end of arcus almost at the second antenodal, 8 antenodals, 8 (right) 9 (left) postnodals, no internal triangle, discoidal triangle free, two posttriangular rows increasing, sectors of the triangle arising from the same point. Base of the wings yellowish-brown, reaching outward to the fourth antenodal and the apex of the triangle; as in the front wings the central part of each cell is clearer, whence Burmeister's "tessellatis".

Total length 30 mm. Abdomen 19. Superior appendages 1.3. Third tibia 5. Front wing 24. Hind wing 23. Pterostigma 3.

Hagen's copy of B. having a * — opposite this name is the reason for mentioning a specimen (abdomen lost, but probably a female from the small amount of color on the wings) in the M. C. Z., having the written pin-label "L. pulla Br. Surinam" in an unknown hand, and a modern type label. It differs from the above description in having on the front wings 9 antenodals, two rows of posttriangular cells from the triangle to the level of the nodus, pale yellow at base to not quite as far as the submedian cross-vein.

Hind wings with 7 antenodals, 7 postnodals, posttriangular cells 2.1.1 2+ (right), 2.1.2+ (left) (i.e. between short sector and the first sector of the triangle); sectors of the triangle separated at origin; base of the wings pale yellow to the level of the first antenodal.

Length of head and thorax 8.5, front wing 19, hind wing 18, pterostigma 2.

Should this female be not conspecific with the above male, the male is of course fixed as the type by the venation in the posttriangular field mentioned by B.

42. **Libellula equestris** Fab. P. 855. [*Neurothemis tullia* Drury.]

Var. *L. feralis* M. B. in litt.

Von Madras, durch Hrn. King.

One male, one female, under the yellow drawer label "equestris Fabr. Madras King" in B.'s hand, at Halle; the male without pin-label, the female with the yellow pin-label "feralis M. Ber. Graf. v. Hoffg."

43. **Libellula unimaculata** de Geer. P. 855. [*Trithemis*.]

Aus Surinam, in Sommer's Sammlung.

I have not seen B.'s specimens which (two) are in the Hofmuseum at Vienna (Prof. Brauer, who refers them to *Erythrodiplax*). *Unimaculata* Burm. (nec de Geer, Rambur) has recently been placed as a synonym of *pulla* Burm. by Mr. Kirby (Ann. Mag. Nat. Hist.—6—xiv, p. 263, 1894).

44. **Libellula connata** B. P. 855. [*Erythrodiplax*.]

♂. Von Valparaiso, in Sommer's Sammlung.

One male in the M. C. Z. with the written pin label "L. connata * Br. Valparaiso Peru" in an unknown hand, to which the words "coll. Sommer" have been added by Hagen. A few notes on this type follow:

♂ (type). The "tota cyanea" of the frons is a very dark blue becoming black on the clypeus and lips. Thorax dark brown, with indistinct black lines on the humeral and lateral sutures and the latero-ventral metathoracic carina; the metepimeron has a greenish tinge. First two abdominal segments dark brown, the others black, pruinose above. Superior appendages as long as 9, black, straight, with denticles below, apparently of the usual shape, the inferior appendage about one-eighth shorter. Genitalia of 2 not easily examined, of the style of *Trithemis*. Neurational details throughout as given for *ochracea*, ante, except as follows: front wings with 10 antenodals, 7 postnodals, three posttriangular rows to the level of the nodus, then increasing to 5-6 marginal cells; hind wings with 7-8 antenodals, 7 postnodals, two posttriangular rows increasing to 10-11 marginal cells. A slight brownish tinge at the extreme base of the front wings not reaching as far as one cell in the postcostal space. On the hind wings there are two dark brown basal streaks, one chiefly in the subcostal space to the first antenodal; the other in the submedian space to about the same level, it "overflows" into the postcostal cells adjoining the membranule, but does not extend backward (caudad) beyond the apex of this latter.

Total length 32 mm., abdomen 20, front wing 25.5, hind wing 24, pterostigma 3.5.

45. **Libellula fallax** B. P. 855. [*Trithemis umbrata* L.]

Aus Surinam, in Sommer's Sammlung.

I have not seen the type which (a female) is in the Hofmuseum

at Vienna (Prof. Brauer). Hagen, writing of *umbrata* L., has "Burmeister's Typen habe ich sämtlich prüfen können. Es gehört von seinen Arten her Heb. T. II pag. 855 u. 856 Lib. *umbrata* aus Surinam und Brasilien, L. *fallax* aus Surinam in Sommer's Sammlung, ein altes ausgefärbtes Pärchen aus Surinam, L. *subfasciata* aus Rio, ein halb ausgefärbtes Männchen in Sommer's Sammlung, L. *tripartita* aus Cuba, in Winthem's, jetzt in meiner Sammlung, ein stark ausgefärbtes mittelgrosses Männchen mit grossem Basalfleck der Hinterflügel, endlich L. *ruralis* aus St. Thomas, ein Weibchen in der Hallenser Sammlung" (Stet. Ent. Zeit. xxix, p 278, 1868).

Prof. Brauer, in his oft-quoted letter of July 15, 1898, to me, refers *umbrata* to *Erythrodiplax*.

46. **Libellula subfasciata** B. P. 855. [*Trithemis umbrata* L.]

♂. Aus Brasilien, in Sommer's Sammlung.

I have not seen the type which (a male) is in the Hofmuseum at Vienna (Prof. Brauer). See note under No. 45.

47. **Libellula tripartita** B. P. 856. [*Trithemis umbrata* L.]

Von Kuba, in v. Winthem's Sammlung.

One male in the M. C. Z., with the printed pin label "Winthem", and the written pin label "3 partita Br. Cuba *". See note under No. 45.

48. **Libellula umbrata** Fab. P. 856. [*Trithemis*.]

Aus Surinam und Brasilien.

Two males under the green drawer-label "umbrata Fabr. d. Geer Bras. v. W." in B.'s hand, at Halle; no pin labels. Some later additions stand with these.

One male in the M. C. Z. with the printed pin-label "Winthem" and the written pin-label "umbrata Fab. Bahia."

See note under No. 45.

49. **Libellula ruralis** B. P. 856. [*Trithemis umbrata* L.]

Von St. Thomas.

Two females (♀) below the green drawer-label "ruralis * St. Thom. v. W." in B.'s hand, at Halle; no pin-labels.

See note under No. 45.

50. **Libellula plebeja** B. P. 856. [*Mesothemis*.]

griseo-fusca, abdomine in basi globoso; alis griseis, stigmatibus brevioribus flavescens. Long. 14".

Aus Südamerika.

One female (♀) below the green drawer-label "plebeja * Bras. v. W." in B.'s hand, at Halle; no pin-label. A description follows:

♀ (type). General color dark luteous, faded, lips brighter. Tip of vertex bifid, eyes barely touching above. Hind lobe of the prothorax nearly as wide as the middle lobe, entire.

Thorax perhaps green in life; a blackish antehumeral stripe not reaching the front wing-base.

Third tibiae with 8 anterior (external), 8 posterior (internal) strong spines.

Abdomen, viewed from above, swollen at 2 and 3, slightly constricted behind the base of 4, of approximately equal width in 5-10. Viewed from the side, it is greatly swollen at 2 and 3. Probably an elongate yellow spot on each side of dorsum of 4-7 in life. Ventral surface partly pruinose.

Appendages pale, slightly longer than 10, shorter than 9. Vulvar lamina produced into an erect, triangular and very prominent trough-like piece.

Wings: reticulation blackish-brown, many cross-veins paler. Pterostigma luteous, surmounting one and parts of two other cells. Membranule cinereous, paler at extreme base. Upper end of arculus between first and second antenodals, no hypertrigonals, nodal sector not waved, only one row of cells between the subnodal sector and the next following supplementary sector, one submedian cross-vein, sectors of the arculus stalked.

Front wings:—Submedian cross-vein on a level with the first antenodal; 14 (right) 13 (left) antenodals, the last not continued to the median vein; 9 (right) 10 (left) postnodals: internal triangle 3-celled, discoidal triangle with one cross-vein, three posttriangular rows increasing at the level of the nodus. Only the barest trace of yellow at the base of the wings.

Hind wings:—Submedian cross-vein nearer the base than is the first antenodal; 9 (right) 10 (left) antenodals, 11 postnodals; no internal triangle, discoidal triangle free, its basal side in the prolongation of the arculus; two posttriangular rows between the short sector and the first sector of the triangle, sectors of the triangle separated at their origins. Yellow at the base of the wings reaching to the submedian cross-vein and back to the apex of the membranule, but the central parts of the cells are clearer.

Total length 40 mm., abdomen 28, appendages .6 mm., third tibiae 5.5, front wing 33, hind wing 32, pterostigma 4.

Mr. Kirby (Cat. Odon. p. 39, 1890) has referred this species to *Lepthemis*. The proportions of wings and abdomen agree rather better with those of *Mesothemis* or *Erythemis*, and until more definite distinctions are drawn between these two it seems best to call this species *Mesothemis plebeja*.

51. **Libellula discolor** B. P. 856. [*Orthemis ferruginea* Fab.]

♂ ♀. In Brasilien;

One male (T), one female (T), below the green drawer-label "discolor * ♂ & ♀ Bras. v. W.'" in B.'s hand, at Halle; no pin labels.

52. **Libellula caffra** B. P. 856. [*Orthetrum*.]

cinereo-flava, vitta thoracis dorsali et laterali duplici albida; alis in summo apice paululum fuscis, stigmatibus fulvis. Long. 1½".

♂. genitalibus superioribus valde prominulis.

♀. abdominis segmento octavo utrinque appendiculato.

Vom Port natal, aus der Sendung des Hrn. Drège.

One male (T), one female (T), under the blue drawer-label "caffra

* Pr. b. sp. Drg." in B.'s hand, at Halle; no pin-labels except a bit of the unmarked blue paper on the pin of the male. A description follows:

♂ (type). Vertex blackish, bifid, apices not acute. Frons olive in front, yellowish on the sides with the two vertical and the one horizontal carinae characteristic for *Orthetrum*. Clypeus paler olive. Lips and rear of head luteous. Occiput olive above; rear of occiput with a distinct median vertical groove.

Prothorax luteous, middle lobe reddish; hind lobe not as wide as the middle lobe, its hind margin entire.

Thoracic dorsum luteous, the sides darker brown. A narrow black antehumeral stripe not reaching the base of the front wing; along its inner (median) side runs an indistinct, pale olive stripe. Mesepimeron and *metepimeron* each with a pale yellow stripe margined with black at their lower ends, ill-defined at their upper ends. Tergal sclerites in interalar space pale yellow, axillary calli brown.

Femora blackish, reddish-brown on their superior surfaces near the base.

Tibiae blackish, the first luteous superiorly near base; the third with 10 anterior (external), 8 posterior (internal) spines.

Tarsi luteous superiorly, blackish inferiorly.

Abdomen widest at base of 3, constricted and narrowest at base of 4, widening to apex of 5, 9 and 10 of equal width; luteous at base and inferiorly; colors on dorsum mostly faded, formerly apparently luteous with black marginal bands to the segments.

Superior appendages longer than 9, not as long as $9 + 10$, black, almost straight when viewed from above, with fairly acute apices; viewed from the side, thickest at base and at three-fourths their length, of the usual form for *Orthetrum*, with a row of 10-11 denticles on the inferior surface, apex acute, directed slightly upwards.

Inferior appendage about two-thirds as long, not reaching to the last (distal) denticle of the superior appendages, triangular and with straight sides when viewed from below, apex truncated and terminating in two upturned denticles.

Genitalia of 2 agreeing with my description of those of *truncatum* Calv., but not easily examined owing to the partial protrusion of the penis; the hook on the outer side of the internal hamular branch very distinct.

Wings hyaline, but with a slightly smoky tinge. Costa as far as the pterostigma, the antenodals in the subcostal space and the cross-veins between the median vein and the upper sector of the arculus yellow on all the wings; all other veins black. Nodal sector distinctly waved. Supplementary sector next below the subnodal separated from it by two rows of cells at a level corresponding to that of the middle postnodals. Supplementary sector next below the short sector separated from it by one row of cells throughout. Upper end of arculus at the second antenodal. One submedian cross-vein slightly nearer the base than the first antenodal is. Pterostigma yellow, surmounting one and parts of two other cells (two cells and small parts of two others on left front wing).

Front wings with 12 antenodals, the last continued to median vein, 10 postnodals; subnodal and nodal sectors parallel and separated by but a single row of cells except at margin where there are two rows for a length of 2-3 cells; internal triangle of 3 cells; discoidal triangle with one cross-vein, followed by three post-triangular rows not increasing until on a level with the last antenodal; first sector

of the triangle forming a high curve; 10 marginal cells between the short sector and the first sector of the triangle. One hypertrigonal.

Hind wings with 9 antenodals, 10 (right) 11 (left) postnodals; subnodal sector not so much waved as the nodal, therefore not entirely parallel, but separated by a single row of cells: triangle free, its basal side very slightly nearer the base of the wing than the prolongation of the arculus would be; two (right) three (left) posttriangular cells, then two rows increasing; sectors of the triangle distinctly separated at origin by .2-.25 mm. interval; 12 (right)-13 (left) marginal cells between the short sector and the first sector of the triangle; no hypertrigonals. Membranule cinereous, only the extreme base, for about .25 mm. in length, white. A very slight, pale yellowish tinge at the base of the wings, most extended opposite the membranule where, however, it does not reach outward as far as one cell.

♀ (type). Vertex more brownish, occiput brown above. Colors of the prothorax and of the sides and ventral surface of the thorax paler, luteous. Pale olive stripe on inner side of the black antehumeral one not apparent. Metepimeric yellow stripe not marked off along its posterior margin from the color of the metepimeron itself. Feet luteous, blackish at knees and on inferior surfaces of tibiae and tarsi: third tibiae with 9 anterior (external), 13 posterior (internal) spines. Shape of the abdomen similar to that of the ♂, but the differences between the widths of the different segments less marked; color luteous with mid-dorsal and lateral carinae black, and with pruinoseness apparent on most of the segments; lateral margins of 8 distinctly produced.

Appendages (right one wanting) longer than 10, not as long as 9, simple, cylindrical, luteous, apex black, pointed; anal tubercle about half as long, yellowish.

Vulvar lamina not produced, similar to that of *brachialis* as I have described it (Proc. U. S. Nat. Mus. xviii, p. 132.).

Wings: cross-veins between median sector and upper sector of arculus blackish. Pterostigma as in the left front wing of the ♂. Fewer double cells between subnodal and next supplementary sector and only one row in the left hind wing. Upper end of arculus between second and third antenodals. The single submedian cross-vein slightly farther from the base than is the level of the first antenodal.

Front wings with 13 (right) 15 (left) antenodals, 8 (right) 9 (left) postnodals; 12 (right) 11 (left) marginal cells between the short sector and the first sector of the triangle; hypertrigonal wanting on the left front wing.

Hind wings: 10 antenodals; 10 postnodals; basal side of the triangle in the prolongation of the arculus: two posttriangular rows from the triangle outward, increasing; sectors of triangle arising from the same point; 14 (right) 12 (left) marginal cells between the short sector and the first sector of the triangle. White at base of membranule twice as great in extent. The yellowish tinge at the base of the wings somewhat deeper and in the submedian space reaching half as far as the level of the first antenodal.

Total length ♂ 43, ♀ 45. Abdomen ♂ 29.5, ♀ 32. Sup. app. ♂ 1.75. App. ♀ 1.3. Third tibia 5-5.5. Front wing ♂ 31, ♀ 34. Hind wing ♂ 30, ♀ 33. Pter. ♂ 3.5, ♀ 3.75. Width of abdomen at base of 3: 3, at base of 4: ♂ 1.3 ♀ 2, at apex of 5: ♂ 2.3, ♀ 2.5, at 10: ♂ 1.5, ♀ 1.75.

53. **Libellula polysticta** B. P. 856. [*Neurocordulia obsoleta* Say.]

Von New-Orleans, in v. Winthem's Sammlung.

One male in the M. C. Z. with the pin-labels "Winthem" printed, "L. polysticta Burm. New Orleans" (written).

In *Psyche*, v, p. 371, 1890, Hagen wrote "the type of Burmeister a male in my collection The type of Burmeister is immature and in bad condition". He mentions it also in *Proc. Bost. Soc. Nat. Hist.* xv, p. 269, 1873.

54. ***Libellula vesiculosa*** Fab. P. 857. [*Leptemis*.]

♂ ♀. Aus Westindien und Brasilien, in Sommer's, v. Winthem's und der Hallenser Sammlung.

One male under the green drawer-label "*vesiculosa* Fabr. St. Thomas" in B.'s hand, at Halle; no pin-label. One female in the M. C. Z. with the pin-labels "Winthem" (printed), "*vesiculosa?* fab. * Bahia" (written).

55. ***Libellula hæmatogastra*** B. P. 857. [*Leptemis*.]

♂. Aus Surinam, in Sommer's Sammlung.

I have not seen the type which (one individual) is in the Hofmuseum at Vienna (Prof. Brauer).

56. ***Libellula frontalis*** B. P. 857. [*Scapanæa*.]

♂. Von St. Domingo, in Sommer's Sammlung.

I have not seen the type which (one individual) is in the Hofmuseum at Vienna (Prof. Brauer).

Hagen says (*Proc. Bost. Soc. Nat. Hist.* xv, p. 375, 1873) of *frontalis*, "At the time I published my Synopsis I had seen only the type of Burmeister."

(No number.) ***Libellula sabina*** Drury. P. 857. [*Orthetrum sabina et O. contractum*.]

Following the sentence last quoted from B. is this one:

Eine ähnliche [to *L. frontalis* Burm.] aber geringere Erweiterung der drei vorletzten Hinterleibsringe zeigt die hierher gehörige verwandte *L. Sabina* (Drury, exot. Ins. I. pl. 48, f. 4). Sie findet sich in China (v. Winthem's Sammlung), und nach Exemplaren in Sommer's Sammlung auch auf der Comorischen Insel St. Johanna.

One male in the M. C. Z. with the pin-labels "Winthem" (printed), "*L. sabina* Drury I pl. 48. f. 4" (written), and "*L. sabina* Drur. *L. gibba* F. L. leptura Burm. *" (in Hagen's hand) is the true *Sabina*.

One teneral male (T) under the blue drawer-label "*Sabina* Drury Ins. Com. Smr." in B.'s hand, at Halle, with white pin-label "62", is of a different species, to which also belong two males in the K. K. Hofmuseum at Vienna, one having the pin-label "*L. sabina* Burm. Johanna. p. 857 no: 56 nota" in Hagen's hand, the other the pin-label "Johanna" in an unknown hand; both of these Vienna males

have an additional pin-label "Collect. Somer 1870", and both were placed at the drawer-label "stemmalis Burm." (in Dr. Brauer's hand) when I saw them. The following description is compiled from notes made from the types at Halle and at Vienna; their proper specific name is, I believe, *contractum* Rambur, of which also I have studied the type (see the index, *post*) at Oxford.

♂ (types of Burmeister). Vertex brown or dark bluish, frons luteous or olive becoming bluish above, clypeus luteous or pale greenish, lips yellowish, median labial lobe brown or black.

Thorax luteous with brown, ill-defined stripes as follows: a short antehumeral not reaching the base of the front wing, a humeral, one at the (obsolete) first lateral suture, one on the second lateral suture; latero-ventral metathoracic carina or a stripe thereon brown, as is a stripe on the mid-dorsal carina in the Halle type.

Legs luteous, knees brown, or blackish with the first femora yellowish inferiorly. Third tibiæ with 7-9 exterior (anterior), 11-13 interior (posterior) spines.

Abdomen luteous, the carinæ and transverse bands at the bases and apices of the segments brown, which on 5 and 6 reduce the luteous to the middle third of the segment and on 7-10 cause its almost entire disappearance (Halle type); or pruinose above, luteous below, with black at the intersegmental articulations having one-third the extent of the luteous of each respective segment (Vienna type).

Appendages of the usual form, very pale yellow, the denticles alone black, tips of the superiors broken off; or blackish except at the tip.

Genitalia of the second abdominal segment essentially similar to the figure I have given for *capensis* (Proc. U. S. Nat. Mus. xvi, p. 584, f. 3, 1893).

Wings: reticulation uniformly brown in the teneral Halle type, blackish-brown throughout in the (older) Vienna males. Pterostigma yellowish, or dark brown. Membranule dark brown, slightly whitish at base. Arculus a little more remote than the second antenodal. But one row of cells between the subnodal sector and the supplementary sector next below.

Front wings: 13-15 antenodals, 10-12 postnodals, one hypertrigonal (2 on left side of Halle ♂), internal triangle 3-celled, discoidal triangle with one cross-vein, three posttriangular rows.

Hind wings: 11-13 antenodals, 11-12 postnodals, no hypertrigonals, triangle free, no internal triangle, two posttriangular rows increasing, sectors of the triangle almost united, or very slightly separated at origins.

Total length 42 mm., abdomen 29 (these two measurements are from the Vienna type, as abdominal segments 7-9 are shrunken in that at Halle). Hind wing 31.5-32. Pterostigma 3.5-3.

In the foregoing description wherever alternative statements indicated by the word "or" are made, the statement before the "or" applies to the Halle type, that after the "or" to the Vienna type. The latter is evidently an older individual.

57. **Libellula stemmalis** B. P. 857. [*Orthetrum*.]

testacea fusco-vittata, fascia frontis media nigra; abdomine fusco, segmentis 1-6 fascia lata testacea; alæ hyalinæ, venis stigmatibusque nigris. Long. 1¾".

Von Isle de France, in v. Winthem's Sammlung.

One male in the M. C. Z. with the pin-labels "Winthem" (printed), "L. stemmalis * Burm. Isle de France" (written). A description follows:

♂ (type). Vertex blackish in front, olive behind, tip distinctly bifid, apices acute. Anterior surface of the frons above the horizontal carina blackish, becoming brownish on the sides, and uniting with a narrow black stripe in front of the vertex and antennæ, leaving a yellow spot on the superior surface of the frons surrounded by the black; below the horizontal carina the frons is pale olive, as is the nasus; rhinarium darker. Lips yellow, labrum with its free margin edged with black and a small triangular blackish spot at the middle of the basal margin which reaches half-way towards the free margin; middle lobe and the inner (mesal) margins of the lateral lobes of the labium black. Occiput yellow behind, obscurer above. Rear of eyes dark brown above (enclosing two yellow spots), yellow below.

Anterior and middle prothoracic lobes dark brown, their anterior margins and a median, basal, dorsal spot yellow. Posterior lobe of almost equal width with the middle lobe, yellow, hind margin entire.

Thorax greenish-luteous with the following dark brown markings: two antehumeral stripes which do not, and a humeral stripe which does, reach the wing base above, a narrow (metepisternal) stripe at the spiracle and a broader (mesepimeral) one in front of it, these two ill-defined, especially in their upper halves, a stripe on the second lateral suture and an ill-defined one (metepimeral) parallel to and behind it. The free greenish-luteous area on the thoracic dorsum between the first antehumeral stripes of each side measures 3 mm. in width; the second antehumeral stripe is united below with the humeral, and both antehumerals, the humeral and the mesepimeral are connected at their lower ends, as also the first antehumeral at its lower end with dark brown on the anterior mesothoracic border. Latero-ventral metathoracic carina black.

Feet luteous, apices of all the femora, inferior surfaces of the second and third femora, inferior surfaces of all and superior surfaces of third tibiæ, tarsi, blackish. Hind tibiæ with outer (anterior) row of 7 spines, inner (posterior) row of 11-12 spines.

Predominant color of abdominal segments 1-3 ochre, 1 and base of 2 with black on each side of dorsum (enclosing an elliptical ochreous spot) and continued as a lateral brown band on each side of 2 and 3; carinæ of 2 and 3 with black stripes and apex of 3 black; 4-10 predominantly black, 4 with a small ochreous spot each side at base, 4-6 with a median ochreous spot each side of dorsum, 4-9 with a ventral ochreous spot occupying the middle of the segments.

Viewed from above the abdomen (whose shape seems well preserved) is widest at 2 (3 mm.), narrowest at base of 4 (1.25 mm.), widens to apex of 6 (2.6 mm.), narrows to 10 (1.6 mm.); the base is strongly compressed.

Superior appendages as long as 9, luteous, brownish at base, apex and ventral surface of the usual form in *Orthetrum*, with seven denticles below. Inferior

appendage one-fifth shorter, reaching backward as far as the last denticle of the superiors, luteous with blackish margins, of the usual form, apex ending in two upturned denticles.

Genitalia of 2. Anterior lamina more prominent than the other pieces; viewed in profile its anterior surface shows a small hump near the middle; apex emarginate. Hamule bifid in its apical half, anterior branch terminating in a sharp slender point which is bent nearly at right angles and directed outwards (laterad); posterior branch wider (about twice when viewed in profile), of nearly equal length, its apex rounded, not hooked. Genital lobe projecting to the same distance as the anterior hamular branch, its width equal to its length when viewed in profile (Pl. I, fig. 12).

Wings hyaline, uncolored, except for the faintest trace of pale yellow on hind wings alongside of membranule and reaching out about one cell. Reticulation blackish except the costa, which is yellowish. Pterostigma ochre, surmounting two and parts of two other cells. Membranule cinereous except at the base, where it is for a small area whitish.

Front wings: 16 (right) 15 (left) antecubitals, last continuous, 13 (right) 11 (left) postcubitals, one hypertrigonal, triangle with one cross-vein, internal triangle of 4 (right) 3 (left) cells, three rows of posttriangular cells to the level of the nodus, one submedian cross-vein slightly farther than the level of the first antecubital.

Hind wings: 11 (right) 12 (left) antecubitals, 11 (right) 12 (left) postcubitals, no hypertrigonals, triangle free, its inner side in prolongation of the arculus, no internal triangle, two rows of posttriangular cells between the short sector and first sector of the triangle to not quite as far as the level of the origin of the median sector, sectors of the triangle slightly separated at origin, one submedian cross-vein slightly nearer than the level of the first antecubital.

All wings: Arculus slightly beyond the second antecubital, next supplementary sector below the subnodal separated from it by two rows of cells at its greatest distance, "loop nervure" below the short sector separated from it by one row of cells.

Total length 50 mm. Abdomen 34. Front wing 36.5. Hind wing 34.5. Pterostigma: front wing 3.6, hind wing 4.; hind tibia 6.

I have tabulated the characters separating *stemmalis* and *Wrightii* Selys, which is but a race, in Proc. Acad. Nat. Sci. Phila., 1898, p. 145.

58. **Libellula chrysostigma** B. P. 857. [*Orthetrum*.]

testacea, fusco-variegata; costa alarum hyalinarum nec non venis transversis inter subcostam et radium albidis; stigmatibus fulvis nigro-marginatis.

♂. corpore pruinoso, abdomine toto fusco.

♀. vitta dorsali thoracis flava, segmentis abdominalibus in medio testaceis.

Von Teneriffa, in v. Winthem's Sammlung.

Two males in the M. C. Z. are thus labeled—One, the male of the above description, with the black abdomen pruinose at base, has the written pin-label "*L. auristigma* Br. (in copula captæ) * Teneriffa"; the other and younger male, the female of the description, has the

pin-label "L. auristigma * Br. Teneriffa" in Hagen's handwriting ; both have the printed label "Winthem". These two males are apparently of the same species and their description follows. Under the column "Old ♂" only the *differences* from the younger ♂ are noted.

(YOUNGER ♂)

Vertex, lips and face luteous, inclining to greenish above. Vertex distinctly bifid, tips acute.

Occiput and rear of the head luteous, the former darker.

Anterior and middle lobes of prothorax brown, their anterior margins and a middle dorsal spot yellow. Posterior lobe of equal width with the middle lobe, luteous, its hind margin entire.

Thorax greenish-luteous with the following dark brown stripes: two antehumeral, a humeral, a mesepimeral, and a metepisternal (at the spiracle). The two antehumerals unite above, the second also with the humeral below. Between the humeral and the mesepimeral is a cream-colored stripe which, like the dark brown stripes, becomes less defined above. Latero-ventral metathoracic carina black.

Legs luteous, apices of all the femora and inferior surfaces of the second and third, third tibiae and inferior surfaces of first and second, tarsi, blackish. Hind tibia with 8 (outer) 12 (inner row) spines.

Abdomen viewed from above widest at 2 (2.6 mm.), narrowest at base of 4 (1.3 mm.) widening to apex of 6 (2 mm.), narrowing to 10 (1.5 mm.); strongly compressed at base. Luteous, carinae, articulations, lateral margins of 4-9, 10 almost entirely, black. Slight pruinoseness on 3.

Superior appendages as long as 9, blackish, of the shape usual in *Orthetrum*, with a row of 7 denticles below. Inferior appendage $\frac{1}{2}$ shorter, luteous with black margins, reaching to the last denticle of the superiors, shaped as usual.

Genitalia of 2 difficult to examine. Anterior lamina slightly more prominent than the other pieces, its anterior surface, viewed in profile, slightly and regularly convex; tip emarginate. Hamule bifid at apex, branches subequal in length, anterior branch without any hook at tip, straight, blunt; posterior branch about three times thicker (seen in profile), tip rounded. Genital lobe projecting equally with the anterior hamular branch, subquadrate (viewed in profile), antero-posterior dimension greater than dorso-ventral. (Pl. I, fig. 11).

(OLD ♂)

Dark olive on the greater part of the frons, labrum yellow unspotted.

All these somewhat obscured and partly covered with pruinose.

6 (outer) 12 (inner).

3 mm.

1.8 mm.

2.4 mm., 1.5 mm.

pruinose on 1-3, black on 4-10 dorsally.

7-9 denticles.

$\frac{1}{2}$ shorter.

Penis partly projecting, parts as described, as far as visible.

Wings hyaline, uncolored save for a pale yellow spot in the submedian space of the hind wings from base half way to cross-vein. Pterostigma yellow surmounting one cell and parts of two others (except in one hind wing. Membranule cinereous, whitish at extreme base. Reticulation blackish: costa, antenodals in the subcostal space, cross-veins between median nerve and median sector out to the level of the nodus, and submedian cross-veins whitish.

Front wings: Antenodals 12, last continuous, 8 postnodals. One hypertrigonal (lacking on the left), triangle with one cross-vein (free on the left, internal triangle two-celled (right) free (left), two rows of posttriangular cells to the level of the origin of the median sector, 9-10 marginal cells between short sector and first sector of triangle. One submedian cross-vein, slightly beyond the level of first antenodal (an additional one, more remote, on right wing).

Hind wings: 9 antenodals, 9 (right) 8 (left) postnodals, no hypertrigonals (one in right wing), triangle free its inner side in prolongation of the arculus, two posttriangular rows between short sector and first sector of triangle to the level of separation of median sector, one submedian cross-vein, nearer the base than is the level of first antenodal (an additional one on right wing, more remote), both sectors of the triangle arising from the hind angle thereof.

All wings: Arculus at the second antenodal. Supplementary sector next below the subnodal at no point separated from it by more than one row of cells.

11 (right) 14 (left) antenodals, 7 postnodals, one hypertrigonal (both sides) triangle crossed (both sides), internal triangle of three cells (both sides), three posttriangular rows.

10 antenodals, 7 postnodals, no hypertrigonals.

Sectors of the triangle slightly separated at origin.

Separated from it by two cells, where the distance is greatest.

	Young ♂	Old ♂		Young ♂	Old ♂
Total length	46 mm.	47	Hind wing	31 mm.	33
Abdomen	32	32	Pterostigma front wings	3.2	3.7
Front wing	32	34.5	hind wings	3.2	4.
			Hind tibia	5.5	6.

59. **Libellula leptura** M[useum] B[erolinense]. B. P. 858. [*Orthetrum sabina* Drury.]

♂ et ♀. Aus Java, vom Herrn Grafen v. Hoffmannsegg.

One male (♂), one female (♀) under the yellow drawer-label "leptura M. B. Java Hoffmngg." in B.'s hand, at Halle; the male without pin-label, the female with the pink pin-label "14". See also under *Libellula sabina*, ante, p. 82.

60. **Libellula sanguinea** B. P. 858. [*Urothemis*.]

corpore sanguineo, subtus cum ore testaceo; alarum venis basilibus costaque sanguineis, stigmatibus flavis nigro marginatis; alæ posticæ macula basali nigra, fulvo-limbata et venosa. Long. 1½". ♂. et ♀.

Von Madras, durch Hrn. King; der Lib. ferruginea Fabr. zwar ähnlich aber gewiss verschieden.

Two males, one (♂) without, the other with pink pin label "19", under the yellow drawer-label "sanguinea * Madras King" in B.'s hand, at Halle. Only the former male is a type and has

(♂ type) front wings at base yellowish-brown half-way to submedian cross-vein. Hind wings with a blackish-brown basal streak in subcostal space and half of costal space to first antenodal, a similar streak in the submedian space almost to the triangle; in the postcostal space a black spot, veined with red, which does not touch the postcostal vein nor the anal margin by a single cell, but reaches out to the level of the triangle and is bordered by a yellowish cloud, which yellow also fills the median space.

The other male, which I did not consider a type, has the yellow on the front wings less extended. On the hind wings, in the costal and subcostal spaces, is a yellow-brown spot reaching but a third of the way to the first antenodal; a yellow-brown spot at the base, from the submedian vein half way to the hind margin of the wing, reaching out to the level of the submedian cross-vein, bordered with a yellow cloud, veined with yellow, the central parts of the cells clearer.

61. **Libellula semiaquea** B. P. 858. [*Tetragoneuria*.]

♀. Von Savannah, in v. Winthem's Sammlung.

One female in the M. C. Z. with the pin-labels "Winthem" (printed), "semiaquea Br. Savannah" (written). The following notes were made from it.

♀ (type). No T-spot or other black spot on the frons. Front wings unspotted. Hind wings with brown extending along the costal margin from base to nodus, thence obliquely towards the anal angle, the outer margin of the brown being very irregular as the central parts of the cells there are clear; the median, submedian and hypertrigonal spaces, the areas between the sectors of the arculus and above the upper sector of the arculus out to the level of the apex (distal angle) of the triangle are clear.

62. **Libellula ferruginea** Fabr. P. 858. [*Crocothemis erythræa*.]

♂. et ♀. das Hallenser Mus. erhielt diese Art vom Herrn Grafen v. Hoffmannsegg aus Java.

One male under the yellow drawer-label "ferruginea Fabr. Donov. Beng. Java." in B.'s hand, at Halle; no pin labels.

63. **Libellula pruinosa** (Hagenb.) B. P. 858. [*Orthetrum*.]

♂. et ♀. Von Java, unter diesem Namen vom Herrn Grafen von Hoffmannsegg;

Two males (♂) under the yellow drawer-label "pruinosa Hag. Java Hoffm." in B.'s hand, at Halle; one with a pink pin-label "20", the other without. I compared them with the description of *Libella pruinosa* by de Selys (Ann. Mus. Civ. Stor. Nat. Genova xxvii, p. 463, 1889), and found them to agree therewith.

64. **Libellula testacea** B. P. 859. [*Orthetrum*.]

fulvo-testacea, alis in basi fulvis; venis stigmatibusque nigris. Long. 1" 10". ♂

Von Java, in v. Winthem's Sammlung;

One male in the M. C. Z. with the pin-labels "Winthem" (printed), "L. testacea * Burm. Java" (written, but without border). Although B.'s description quoted has "venis stigmatibusque nigris", this male has the costa as far as the pterostigma and most of the antenodals in both costal and subcostal spaces yellowish; pterostigma ochre-brown. The yellow at the base of the front wings extends out to a little farther than the level of the first postcostal cell, on the hind wings to the first antenodal and the distal subbasal sector (Kirby). In other respects it agrees with de Selys' brief description (*l. c.* p. 463, 1889).

65. **Libellula Aurora** B. P. 859. [*Trithemis*.]

rufo-fulva, alis omnibus in basi fulvis, venis sanguineis, stigmatibus minoribus fuscis. Long. 1 1/4". ♂.

Von Manilla, in v. Winthem's Sammlung. Hat ganz die Statur der vorigen Art, ist jedoch viel kleiner und röthlicher.

Two males in the M. C. Z. One with the pin-labels "Winthem" (printed), "Aurora * Br. Manilla" (written, see fig. F, page 30), is referred to below as the "labeled type"; the other with merely the printed pin-label "Winthem" is the "unlabeled type". The following description is based on both.

♂ (types). Frons red in front, metallic violet above, nasus red, rhinarium and labrum olivaceous, the latter with a round black spot at the middle of its free margin, but not reaching to the base; labium luteous, middle lobe black, inner (mesal) margins of the lateral lobes narrowly edged with black; vertex, lost in the labeled type, metallic violet, tip slightly concave, occiput luteous, rear of eyes yellow with two black spots.

Prothorax reddish, hind lobe narrower than the others, semicircular, hind margin entire. Thorax and abdomen reddish, and pruinose in the labeled type, with black lines on the humeral and lateral thoracic sutures, a curved stripe on the pectus immediately in contact with the latero-ventral metathoracic carina, uniting with its fellow of the opposite side at its posterior end, its anterior end stopping at the third coxa; the pectus has therefore a black ring open only for a very short interval anteriorly.

Feet luteous or reddish; first femora superiorly, all of second and third femora, tibiae inferiorly and tarsi black.

Abdomen widest at apex of 6 (3 mm.; at 2, 2 mm.; at 4, 2 mm.; at 10, 1.25 mm.), unspotted except for the articulation 9-10 and the sterna, which are black.

Superior appendages with their extreme tips acute, as long as 9, red, nearly straight viewed from above, viewed in profile arched in their basal half, nearly straight in their apical half, thicker in the third fourth, where there is a row of four denticles on the inferior surface. Inferior appendage reaching distinctly beyond these denticles, triangular, about one and two-thirds times as long as greatest width (at base).

Genitalia of 2: hamule and genital lobe equally prominent, anterior lamina less so, its margin entire. Hamule bifid at apex, inner branch the more slender, curved to form a hook directed backward, outer branch shorter, obtuse, rounded at tip. Genital lobe rather slender, about two and one-half times as long as wide, curved slightly forward, narrowed at the tip. (Pl. I, fig. 8).

Wings clear, reticulation red, pterostigma dark brown, surmounting one and parts of two other cells, membranule blackish. Arculus between first and second antenodals, or at the second on hind wings of the unlabeled type, its sectors stalked, separated throughout by one row of cells only. Nodal sector very slightly waved, separated from the subnodal by one row of cells except at the wing margins. Supplementary sector next below the subnodal separated from it (at the level of the middle postnodals) by two rows of cells, one submedian cross-vein nearer the base than is the first antenodal, no hypertrigonals.

Front wings with 15-13 antenodals, the last not continuous, 10-11 postnodals, triangle with one cross-vein, internal triangle of three cells, three rows of post-triangular cells to the wing margin (four cells immediately after the triangle on the right, then three rows in the labeled type). Brownish yellow at base reaching to the submedian cross-vein, or not quite so far (labeled type).

Hind wings: 10-9 antenodals, 13-11 postnodals, triangle free, its proximal side in prolongation of the arculus, no internal triangle, two rows (three, then two rows, left side of unlabeled type) of posttriangular cells increasing to 12-14 marginal cells, sectors of the triangle united (barely separated, left side of labeled type) at their origin. Brownish yellow at the base reaching to the first antenodal for the entire width of wing, but clearer in the median space (labeled type), to the second antenodal with the subcostal and submedian spaces darker brown (unlabeled type).

Total length 33-36 mm. Abdomen 23-24. Front wing 28-29. Hind wing 27. Pterostigma 2.25. Superior appendages 1.5.

66. **Libellula sanguinolenta** B. P. 859. [*Trithemis*.]

sanguineo-fulva, alis omnibus in basi fulvis, venis stigmatibusque latioribus sanguineis. Long. 14". ♂.

Vom Kap, in v. Winthem's Sammlung; gleicht sehr der Vorigen, ist indess durch die Breite und Farbe des Flügelmahles von ihr verschieden.

Two males in the M. C. Z. One has the pin-labels "Winthem" (printed), "Sanguinolenta * Br. Prom. bon. sp." (written), the other has merely the printed pin-label "Winthem"; they are referred to in the following description as the "labeled" and the "unlabeled" types respectively.

♂ (types). Almost entirely red; labrum along its free edge, labium, bases of the mandibles, occiput, rear of head and abdominal segments 1-3 inclining to luteous. A very slight blackish streak on the middle of the lateral carinae of 3-6 or 8 (middle of mid-dorsal carina of 3-5 and 8-9 very slightly browned; trace of a small, median, apical, dorsal, darker spot on 9 in the labeled type only), sterna of 3-8 black.

Hind lobe of prothorax narrower than the other lobes, its shape that of a small segment of a circle, its hind margin with a slight median notch.

Superior appendages slightly longer than 9, red, subcylindrical, thickened before the acute apex, third fourth with an inferior row of seven black denticles. Inferior appendage one-eighth shorter, red, triangular, about twice as long as wide at base, reaching beyond the denticles of the superiors, its tip ending in the usual two upturned denticles.

Genitalia apparently not at all different from my description and figure of those of *Trithemis ferrugaria* Ramb. (Proc. U. S. Nat. Mus. xviii, p. 125, figs. 4, 5.)

Wings clear, reticulation reddish near the costal margin, becoming blackish posteriorly. Pterostigma reddish, surmounting one cell and parts of two others. Membranule blackish.

Arculus between the first and second antenodals, its sectors stalked, nodal sector not waved, supplementary sector next below the subnodal separated from it by but one row of cells, no hypertrigonals.

Front wings with ten antenodals, the last not continuous, 7-8 postnodals, one submedian cross-vein, nearer the base than is the first antenodal except in one wing of one ♂, discoidal triangle with one cross-vein, internal triangle of three cells (two, right side of unlabeled type) three rows of posttriangular cells to the level of the origin of the subnodal sector, increasing to 9-11 marginal cells. Yellow at base extending to the submedian cross-vein.

Hind wings: 7-8 antenodals, 7-8 postnodals, two submedian cross-veins (except in the left hind wing of unlabeled type, where there is but one), discoidal triangle free, its inner side in prolongation of the arculus (or slightly more remote in one wing of one ♂), two rows of posttriangular cells for two to three cells, increasing to 9-10 marginal cells, sectors of the triangle united at origin. Yellow at base extending to the second antenodal and the arculus thence obliquely inwards (mesad) to the anal angle.

Total length 34 mm. Abdomen 22. Front wing 27.5. Hind wing 26. Pterostigma 3.

The drawer-label in Dr. Hagen's handwriting after which these two types are placed reads "L. sanguinolenta Burm. L. ferrugaria Ramb." From Rambur's description of his *ferrugaria* these two males differ not at all, nor can I find any difference of specific value in the specimens which I described as *ferrugaria* in Proc. U. S. Nat. Mus. xviii, p. 125.

67. **Libellula contaminata** Fab. P. 859. [*Brachythemis*.]

♂. Von Madras, durch Hrn. King; in der Hallenser Sammlung.

Two males under the yellow drawer-label "contaminata Fabr. Madras King" in B.'s hand, at Halle; no pin-labels.

One male in the M. C. Z. with the yellow pin-label "*coll. German contaminata Fabr. Java Br. Type Burm. II, 859.*", the words here printed in italics being in Hagen's hand. Hagen's copy of B. has no * for this species.

68. **Libellula zonata** B. P. 859. [*Pseudothemis*.]

♂. Aus China, in Sommer's Sammlung.

I have not seen the type which (a single specimen), Prof. Brauer writes, is in the Hofmuseum at Vienna.

69. **Libellula coerulescens** Fab. P. 859. [*Orthetrum*.]

♂. ♀. Im südlichen Deutschlande und Europa.

One male under the white drawer-label "*coerulescens* aut. Tyrol v. Klaas." in B.'s hand, at Halle; no pin-labels.

One male in the M. C. Z. with the pin-label "*Coll. Germar coerulescens* Fbr. *Type Burm.*," the words here printed in italics being in Hagen's hand; his copy of B. has no * for this species.

70. **Libellula cancellata** Linn. Fab. P. 859. [*Orthetrum*.]

♂. ♀. Lib. lineolata Charp. hor. entom. 44.

In Europa überall, aber nicht sehr häufig.

One female under the white drawer-label "*cancellata* Fabr. Sund" in B.'s hand, at Halle; no pin-label. Under a separate label "*lineolata* Charp. Eur. austr." also in B.'s hand, at Halle, are two males, without pin-labels.

71. **Libellula conspurcata** Fab. P. 860. [*Libellula fulva* Müll.]

♂ ♀. Gemein in ganz Europa.

Two males, one female, under the white drawer-label "*conspurcata* Charp. ♂ & ♀" in B.'s hand, at Halle; no pin-labels.

72. **Libellula depressa** Linn. P. 860. [*Platetrum*.]

♂ ♀. Ueberall in ganz Europa.

Two males, two females, under the white drawer-label "*depressa* aut." in B.'s hand, at Halle; no pin-labels.

73. **Libellula sexmaculata** Fab. P. 860. [*Palpopleura*.]

♀. Aus China, in Sommer's Sammlung;

I have not seen the type which (a single specimen) is in the Hof-museum at Vienna (Prof. Brauer).

74. **Libellula marginata** Fab. P. 861. [*Palpopleura lucia* Drury.]

♂. Vom Port natal, aus der Sendung des Herrn Drège.

Two males under the blue drawer-label "*marginata* * Port. nat. Drg." in B.'s hand, at Halle; one without pin-label, the other with a bit of unmarked blue paper. Hagen's copy of B. has * — opposite this species, but there is no B. specimen in the M. C. Z.

75. **Libellula semivitrea** B. P. 861. [*Palpopleura*.]

Von der Comorischen Insel St. Johanna; in Sommer's Sammlung.

One teneral male under the blue drawer-label "*semivitrea* * Ins. St. Johña" in B.'s hand, at Halle; with pink pin-label "68".

76. **Libellula luctuosa** B. P. 861. [*Libellula basalis* Say.]

♂ ♀. Aus Pennsylvanien, in Sommer's Sammlurg.

I have not seen the two types which are in the Hofmuseum at Vienna (Prof. Brauer).

77. **Libellula auripennis** B. P. 861. [*Libellula*.]

Von Savannah, in v. Winthem's Sammlung.

One male in the M. C. Z. with the written pin-label "L. auripennis Burm. * Savannah", and the printed pin-label "Winthem."

78. **Libellula trimaculata** de Geer. P. 861. [*Plathemis*.]

♂ ♀. Aus Nord-Amerika, in v. Winthem's und der Hallenser Sammlung.

Two males under the pink drawer-label "trimaculata aut. Am. bor. Zm." in B.'s hand, at Halle; no pin-labels.

One teneral male in the M. C. Z. with the written pin-label "Lydia Drury 3-maculata Fab. Savannah", and the printed pin label "Winthem".

See also under No. 81, *post*.

79. **Libellula quadrimaculata** Linn. P. 861. [*Libellula*.]

Nicht selten, in ganz Europa;

One male, two females, under the white drawer label "4-maculata Fabr. Sund." in B.'s hand, at Halle; no pin-labels.

80. **Libellula semifasciata** B. P. 862. [*Libellula*.]

♀. Aus Nord-Amerika; von Zimmermann.

One female (T) under the pink drawer-label "semifasciata * Am. bor. Zm." in B.'s hand, at Halle; no pin-label.

81. **Libellula bifasciata** de Geer. P. 862. [*L. pulchella* Drury.]

Eben daher, beide Geschlechter in der Hallenser Sammlung.

One male, one female, under the pink drawer-label "bifasciata aut. Am. bor. Zm." in B.'s hand, at Halle; no pin-labels.

In the M. C. Z. is a female with the written pin-label "bifasciata Fab. pulchella Drury Savannah" and the printed pin-label "Winthem"; it is, however, a female of *L. trimaculata* de Geer and, quite probably, B.'s type of *trimaculata*, but wrongly labeled by Winthem, or by whoever labeled Winthem's collection. This supposition finds support in the facts (1) that although B. quotes both sexes of *trimaculata* (see No. 78 *ante*) only *male* types are so labeled at Halle and in the M. C. Z.; (2) that B. cites only the Hallenser Sammlung for *bifasciata*; (3) that Hagen's copy of B. has no * opposite No. 81.

SUPPLEMENTAL NOTE ON THE TYPES AT VIENNA.

The hope expressed on page 34, *ante*, is realized by the following letter from Prof. Brauer, dated Vienna, July 15, 1898.

"In beantwortung Ihres Schreibens vom 2. Mai d. J. theile ich Ihnen mit, dass folgende Typen Burmeisters aus Sommers Sammlung im M. C. sich befinden :

<i>Agrion</i>	1. <i>lucetia</i>	3	Exemplare.
	4. <i>macrurum</i> *	3	"
<i>Aeschna</i>	2. <i>quadriguttata</i> *	1	"
	3. <i>costalis</i> *	1	"
	4. <i>luteipennis</i> *	1	"
	5. <i>reticulata</i> *	1	"
	6. <i>gracilis</i> *	2	"
<i>Libellula</i>	5. <i>tessellata</i> *	1	"
	15. <i>rufinervis</i> *	1	"
	24. <i>terminalis</i> *	2	"
	25. <i>basalis</i> *	1	"
	27. <i>chinensis</i>	1	"
	34. <i>pullata</i> *	1	"
	43. <i>unimaculata</i>	2	"
	45. <i>fallax</i> * ♀	1	"
	46. <i>subfasciata</i> * ♂	1	"
	55. <i>hæmatogastra</i> *	1	"
	56. <i>frontalis</i> *	1	"
	68. <i>zonata</i> *	1	"
	73. <i>sexmaculata</i>	1	"
	76. <i>luctuosa</i> *	2	"

Von den von Ihnen verzeichneten fehlen :

<i>Diastatomma</i>	1. <i>clavata</i> .	Wir haben die Art, aber nicht aus Sommer's Collect.				
	4. <i>campanulata</i>	fehlt i. M. C.				
<i>Aeschna</i>	17. <i>dorsalis</i> .					
	19. <i>amazili</i> .	Wir haben die Art, aber nicht von Sommer.				
	20. <i>papuensis</i>	"	"	"	"	"
<i>Libellula</i>	26. <i>carolina</i>	"	"	"	"	"

Nicht verzeichnet in Ihrem Briefe, aber am M. C. vorhanden sind *Aeschna luteipennis*, *Aeschna 4 guttata*, *Tramea chinensis* u. einige europäische Arten aus Sommer's Sammlung.

II. Collection not given. Von diesen 6 Arten† haben wir die Type von (*Brachyt.*) *Aeschna vernalis* allein."

(Signed)

BRAUER.

I desire to here express my thanks to Prof. Brauer for his kindness.

† These are those referred to under (b) on page 35, *ante*. To Prof. Brauer's list of B.'s types in Vienna from Sommer's collection must be added the two males of *Lib. sabina* mentioned on page 82, *ante*.—P. P. C.

TYPES WHICH HAVE NOT BEEN FOUND.

As a result of Prof. Brauer's letter, it is now possible to say that of the 171 species described by Burmeister, the present locations of his types of the following 11 are unknown to me :

<i>Calopteryx</i>	3. <i>Titia</i>	<i>Aeschna</i>	17. <i>dorsalis</i> *
<i>Diastatomma</i>	1. <i>clavata</i>		19. <i>Amazili</i> *
	3. <i>tricolora</i>		20. <i>papuensis</i> *
	4. <i>campanulata</i> *	<i>Libellula</i>	26. <i>carolina</i>
<i>Aeschna</i>	1. <i>lunulata</i>		32. <i>fulvia</i> .
		<i>Libellula</i>	37. <i>fasciata</i> .

As before, the asterisk (*) indicates the new species.

APPENDIX ON CERTAIN AFRICAN SPECIES OF ORTHETRUM.

As the researches embodied in this paper originated in an attempt to identify certain species of *Orthetrum* described by the older authors, it seems not inappropriate to bring together here the notes made upon some types of Rambur, Palisot de Beauvois, de Selys and Brauer, and to correlate their species with those described by Burmeister and by myself. It is one thing to determine whether two nominal species are practically identical or not ; it is another to ascertain if two seemingly different forms are really but extremes of a variable series. I shall here attempt the former only. The latter requires careful study of a large number of individuals, and only those who have examined such a series, as that in the Museum für Naturkunde at Berlin, can appreciate the extreme difficulty of defining the African species of *Orthetrum*.

Tentative Key to some African species of Orthetrum.

‡ I. Front wings with three rows of posttriangular cells (two rows in one type of *chrysostigma*, see page 85).

A. Hind wings of both sexes with at least a slight yellowish basal cloud ; membrane blackish, whitish at the extreme base (except in *Abbotti*, where it is grayish-white throughout). Abdomen vesiculose at base, contracted at 3, at least in the males. Arculus at the second antenodal or more remote.

Costa sometimes yellowish, but the reticulation otherwise dark brown or black. No pale yellow stripes on the sides of the thorax.

Frons uniformly colored above1. **contractum** Rambur.

Frons above with a pale spot, which is surrounded by black.

2. **stemmale** Burm. and race *Wrightii* Selys.

Costa and antenodals in the subcostal space, at least, yellow.

No pale yellow stripes on the sides of the thorax.

3. **brachiale** Beauvois.

One or more pale yellow stripes on the sides of the thorax.

Sides of thorax with one pale stripe, which is on the mesepimeron; male with the internal hamular branch not hooked at tip, inferior appendage reaching to the last denticle of the superiors. Front wings with hypertrigonals 4. **chrysostigma** Burm.

Sides of thorax with two pale stripes, one on the mesepimeron, one on the metepimeron; male with the internal hamular branch distinctly hooked at tip, inferior appendage not reaching to the last denticle of the superiors. Front wings with hypertrigonals.

5. **caffrum** Burm.

Sides of thorax with a pale stripe on the metepisternum and the entire metepimeron pale green; male with the internal hamular branch not hooked at tip, inferior appendage not reaching as far as the last denticle of the superiors, anterior lamina with a denticulated tubercle on its anterior surface. Front wings with hypertrigonals.

6. **Abbotti** Calvert.

Sides of thorax pruinose in types, younger colors unknown; males with the internal hamular branch prolonged into a horn-like apex bent a little backwards. No hypertrigonals. 7. **farinosum** Förster.

B. Hind wings of both sexes uncolored, membranule black.

Costa exteriorly and the antenodals yellow; abdomen vesiculose at base, contracted at 3, in both sexes 8. **trinacria** Selys.

C. Hind wings in the males at least uncolored, membranule grayish-white. Abdomen but little, or not at all, contracted at 3.

Arculus at the second antenodal, frons not more prominent than in the other species, pterostigma rhomboidal, male with the hamule more prominent than the other genitalia, its external branch longer than the internal; wings uncolored (♂) or yellowish at the base (♀), neuration black including the costa 9. **azureum** Rambur.

Arculus between the first and second antenodals, frons more prominent than in other species, pterostigma trapezoidal, male with the genital lobe more prominent than the other genitalia, external hamular branch shorter than the internal; wings uncolored (♂), neuration blackish except the costa, which is yellow; ♀ unknown.

10. **Ransonnети** Brauer.

‡ II. Front wings with four rows of posttriangular cells.

Abdomen not vesiculose at base, costa externally and some antenodals yellowish. Pterostigma very long (6 mm.) 11. **leoninum** Karsch.

1. **Orthetrum contractum** Rambur.

Libellula c. Ramb., Névr. p. 60, 1842.—Mauritius, Madagascar.

Synonyms: *Lib. coarctata* Ramb. l. c. p. 61—Mauritius.

Lib. sabina (not Drury) Burm. Hdb. ii, p. 857, 1839—from Comoro Is. only; see page 82, ante.

Orthetrum brachiale (not Beauvois) Calvert, Trans. Am. Ent. Soc. xix, p. 162, 1892; Proc. U. S. Nat. Mus. xviii, p. 130, 1895 (1896).—Kilima Njaro.

Förster, Ent. Nach. xxiv, p. 169, 1898.—Transvaal.

Orthet. capensis Calvert, Proc. U. S. Nat. Mus. xvi, p. 584, 1893.—Cape Town.

Contracta and *coarctata* were described by Rambur from the collection of Marchal, now in the Hope Collection, University Museum, Oxford, England. The type of *contractum* is a male from Maurice, marked "la tete est fausse", which is correct, as the head is not that of an *Orthetrum*. On the reverse side of the label is written "*Libellula brachialis* Maurice" and some words in French that I could not decipher.† The following notes were made Sept. 3, 1896:

Rambur's type of *Lib. contracta* at Oxford [only] differs from my description of *brachialis* [Proc. U. S. Nat. Mus. l. c.] in having the anterior lamina more prominent than any other part.

The costal vein like all others, including the antenodals, is blackish. The coloring at the base of hind wings is restricted to the merest trace of brownish-yellow in the submedian space and alongside the base of the membranule, but it does not reach as far as one cell in the area below the postcostal vein. Two rows of cells between the subnodal sector and the next supplementary sector below—at the level of half-way between nodus and pterostigma. Sectors of the triangle united at origin. Arculus of all wings beyond the second antenodal.

Abdomen 31.5 mm., front wing 35, hind wing (not entire), pterostigma 3.75.

This is surely the same species as that which I have described as *brachialis* Beauv.

The type of *coarctata* is a female from Ile-de-France; the last six abdominal segments are wanting. These notes were also made Sept. 3, 1896:

Rambur's type of *Lib. coarctata* at Oxford differs from my description of *brachialis* ♀ [Proc. U. S. Nat. Mus. l. c.] in that the light colors of the abdomen are yellow rather than brown.

Pterostigma luteous, membranule cinereous; reticulation, including costa and cross-veins, blackish. Sectors of the triangle of the hind wings united at origin. Two rows of cells between the subnodal sector and the next supplementary sector below. Arculus of all wings beyond the second antenodal.

Front wing 38 mm., hind wing 36.5, pterostigma 4.5.

2. *Orthetrum stemmale* Burmeister.

Libel s. Burm. Hdb. ii, p. 857, 1839.—Mauritius. See page 82, *ante*, for description of the type, and Proc. Acad. Nat. Sciences, Philadelphia, 1898, p. 145, for the trifling differences between it and *O. Wrightii* Selys, of the Seychelles.

3. *Orthetrum brachiale* Beauvois.

Libellula b. Beauv. Ins. recueil. Afr. Amer. p. 171, Neur. pl. 2, fig. 3, 1805. Rambur, Ins. Névr. p. 62, 1842. Selys, Ann. Soc. Ent. Belg. xxxi, p. 21, 1887. Not of Calvert 1892, 1895, nor Förster, 1898.

† I studied the types of Rambur, at Oxford, on July 10, 1895, and Sept. 3, 1896. On my first visit, there was no guide to their typical character other than the peculiar style of label bearing the name of the locality and a blue-line border measuring 7 x 9½ mm. On my second visit, I found these marked with a specially printed label indicating them as types. See Ent. News vii, p. 66 foot-note, March, 1896, and Ninth Annual Report of the Delegates of the University Museum [Oxford] (for 1896), page 34.

The types of Beauvois are in the collection of Baron de Selys-Longchamps at Liège, Belgium, and have furnished the three descriptions just quoted. They comprise three males and one female and are labeled as follows: the notation (1), (2), (3), (*a*), (*b*), (*c*), (*d*), is for the present purpose only.

♂ type (1) has the four pin-labels (*a*) "Oshna Bauv" in faded black ink; (*b*) "l'Afrique" in red ink, this is Serville's label; (*c*) "L. brachialis" in faded black ink; (*d*) a bit of unmarked paper, gold on one side, white on the other.

♂ type (2) has pin-labels as above except that (*c*) is a blue label with "L. brachialis Beauv. ♂ à renvoyer" in de Selys's hand; abdominal segments 8-10 are lacking.

♂ type (3) lacks label (*a*), but is otherwise as in (1).

♀ type has labels as in ♂ type (1).

The four types have the costa as far as the pterostigma, the cross-veins in the costal and the subcostal spaces, and those between the median sector and the upper sector of the arculus—yellow; two rows of cells between the subnodal sector and the supplementary sector next below. Male types (1) and (3) have the sectors of the triangle of the hind wings arising from the same point, while ♂ type (2) and the ♀ type have them slightly separated at origin. The genital lobe is a little more prominent than the anterior lamina or the hamule in ♂ types (1) and (3), while in ♂ type (2) the anterior lamina is more prominent than the hamule or the genital lobe.† Pterostigma ochre-brown, 3.5 mm. long, in the males, paler yellow in the female.

Otherwise agreeing with my description of *brachiale* in Proc. U. S. Nat. Mus. xviii, p. 130.

Thanks to the kindness of Baron de Selys-Longchamps, I made the foregoing notes at Liège, in August, 1896.

4. *Orthetrum chrysostigma* Burmeister.

Libellula c. Burm. Hdb. ii, p. 857, 1839; see page 85, *ante*.—Teneriffe.

O. c. McLachlan, Journ. Linn. Soc. xvi, p. 177, 1882. *L. c.* Selys, Ann. Soc. Ent. Belg. xxxi, p. 18, 1887.

Synonym? *Lib. barbara* Selys, Explor. Sci. Alger. Zool. iii, p. 117, pl. 1, figs. 2, 2a-h, 1849; Rev. Odon. p. 306, 1850.—Algeria.

Baron de Selys (*l. c.* 1887) considers *barbara* a synonym of *chrysostigma*. I saw the type of *barbara* in August, 1896, therefore previous to my study of the types of *chrysostigma*. Recently, in reading the descriptions of *barbara* (*l. c.*), I noticed this clause in the description of the thorax: "l'on voit l'apparence d'une seconde raie pâle des secondes ailes aux troisièmes pattes", an expression which applies better to the description of *caffra* (page 79, *ante*)

† It is such differences as this which have caused me to recede, to a certain extent, from the opinion expressed in Proc. U. S. Nat. Mus. xviii, p. 130, that "the most reliable specific characters are to be found in the genitalia of the male and the vulvar lamina of the female."

than to that of *chrysostigma* (page 85, *ante*). A further agreement with *caffra* and difference from *chrysostigma* is contained in M. Albarda's description (Selys 1887, *l. c.* p. 20) of the internal hamular branch of *barbara* as "munie d'un crochet noir-luisant dont la pointe est tournée en arrière". I am unable, however, to decide the question thus raised. The notes which I made in August, 1896, are as follows:

Selys' type of *Lib. barbara*, with label in his handwriting "L. barbara Selys ♂ type Alger à renvoyer", has pterostigma yellow, cross-veins in costal and subcostal spaces and between the median sector and the upper sector of the arculus yellow. Two rows of cells between the subnodal sector and the next following supplementary sector, except in the right hind wing. Sectors of the triangle of the hind wings a little separated at origin. Penis projecting so that the hamule is not easily seen, but considerable variation in the form of the hamule exists in the specimens in S. coll. from Tangiers and Damara and the differences from the form of *brachialis* [Calv.=*contracta* Ramb.] do not seem to be great enough to be specific.

I am unable to correlate the figures of the genitalia of *chrysostigma* Karsch, Berl. Ent. Zeit. xxxix, p. 15, 1894, with that I give here, Pl. I, fig. 11, from Burmeister's type.

5. *Orthetrum caffrum* Burmeister.

Libellula c. Burm. Hdb. ii, p. 856, 1839; see page 79, *ante*.—Natal.

Synonyms: *Lib. fasciolata* Rambur, Ins. Névr. p. 69, 1842.—Cape of Good Hope.

? *Lib. subfasciolata* Brauer, Verhdl. z. b. Gesell. Wien, xv, p. 506, 1865; Reise d. Novara, Neur. p. 97, 1866.—Cape of Good Hope.

Orthet. truncatum Calvert, Trans. Am. Ent. Soc. xix, p. 162, 1892; Proc. U. S. Nat. Mus. xviii, p. 128, 1895 (1896).—Kilima Njaro.

? *Lib. barbara* Selys. See under *chrysostigma* above.

The referring of *fasciolata* to *caffra* is on the authority of Baron de Selys (Ann. Mus. Civ. Stor. Nat. Genova, xvi, p. 222, 1881) who remarks "I tipi di Burmeister erano di Porto Natal, raccolti da Drégé. Quelli di Rambur, il quale non ha conosciuto che le femmine, sono indicati come provenienti dal Capo di Buona Speranza. Essi facevano parte della Collezione Serville, che oggidi è riunita alla mia." I have not studied Rambur's types, but his description seems to agree with that of *caffra*.

The agreement of the descriptions of *subfasciolata* Brauer (the type of which I have not studied) with that of *caffra* likewise induces me to regard that name as synonymous.

I have compared two of the six types of *truncatum* Calvert and am satisfied that they also are *caffra*.

A re-examination of the two individuals referred to *caffra*, on Dr. Hagen's authority, in Proc. U. S. Nat. Mus. xvi, p. 584, will be necessary before deciding whether they really are such.

6. **Orthetrum Abbottii** Calvert.

O. a. Calvert, Trans. Am. Ent. Soc. xix, p. 162, 1892; Proc. U. S. Nat. Mus. xviii p. 133, 1895 (1896).—Kilima Njaro.

I saw (and, I believe, labeled) some individuals in the Museum für Naturkunde, at Berlin, and in the K. K. Hofmuseum, at Vienna, which I regarded as belonging to this species, but I can not find any note as to the localities from which they came. I did note that these individuals had one row of cells between the subnodal sector and the supplementary sector next below, that the membranule was somewhat grayish, and that the male at Vienna has 9 (right) 8 (left) postnodals on the front wings. The male at Vienna was placed under *anceps* Schneider, but I believed that at least two species were there included. I know nothing of the types of *anceps*, which was described from females from Asia Minor, but a comparison of the description in Revue des Odonates, p. 291, with mine of 1896 shows the following differences:

	<i>Anceps</i> ♀	<i>Abbottii</i> ♀
Abdomen	29.7 mm.	24
Hind wing	33.7	29
Pterostigma	2.8	3.5
Vertex	strongly crenate	truncated
Vulvar lamina	broadly crenate	straight, entire
Wings	uncolored (adult), of a yellow tint on the costal border and especially at the base (young).	an extremely small fulvous cloud at base of the long veins.
Abdominal segments	with two small posterior black spots on each segment, 8-10 chiefly olive (adult) or yellow (young)	such spots absent, 8-10 chiefly black.

If the male from Beirut, doubtfully referred to *anceps* by de Selys (Ann. Soc. Ent. Belg. xxxi, p. 16, 1887), really be that species, then we have the following differences for the male sex:

	<i>Anceps</i> ? ♂	<i>Abbottii</i> ♂
Abdomen	22.5 mm.	25. mm.
Hind wing	26.	28.
Pterostigma	2.	3.5-4
Anterior lamina	little prominent	more prominent than any other genital piece
Front wings with	10 antenodals 6 postnodals	12-13 antenodals 8-10 postnodals

Herr Förster erroneously refers (Ent. Nach. xxiv, p. 172, 1898) to "das Fehlen der Hypertrigonalqueradern im Vorderflügel" of *Abbottii*. Their presence is mentioned in my longer description which he quotes in the footnote to p. 168.

Is *Orthetrum Phillipsi* Kirby, Proc. Zool. Soc. Lond. 1896, p. 522, from Somaliland, the same as *Abbottii*?

7. *Orthetrum farinosum* Förster.

O. f. Förster, Ent. Nach. xxiv, p. 169, 1898.—Transvaal.

I have not seen this species, but have placed it in the preceding key from the excellent description alone. Herr Förster believes it to be allied to *Abbottii*, but two of the distinctions which he draws between the two species are, I believe, of no value. These are the number of rows of posttriangular cells in the hind wings, and the position of the submedian cross-vein in the front wings. The three rows of posttriangular cells of the hind wings of *Abbottii* are due to the wide separation of the sectors of the triangle, so that two of the three rows lie above, the third below, the upper sector.

The absence of hypertrigonals in *farinosum* may be a more constant difference, although variations of this kind occur in the types of *caffra* and of *chrysostigma*.

8. *Orthetrum trinacria* Selys.

Lib. t. Selys, Rev. Zool. 1841, p. 244; Rev. Odon. p. 1850; Ann. Soc. Ent. Belg. xxxi, p. 19, 1887. McLachlan, Journ. Linn. Soc. Lond. Zool. xvi, p. 178, 1882.—Sicily, Egypt, Senegal. *O. t.* Calvert, Proc. U. S. Nat. Mus. xviii, p. 145, 1895 (1896).—Tana River, East Africa. McLachlan, Ent. Mo. Mag. (2) viii, p. 153, 1897.—Algeria. Karsch, Ent. Nach. xxi, 1895. Selys *l. c.* is authority for the synonyms *Lib. clathrata* and *Bremii* Ramb. Névr. p. 48, 1842.

9. *Orthetrum azureum* Rambur.

Lib. a. Ramb. Névr. p. 68, 1842. Selys, Rev. Odon. p. 292, 1850.—Madagascar.

Rambur's type was a female, now in Baron de Selys' collection, which also contains a male bearing this specific name on the pin. I made the following notes on them in August, 1896:

Azurea Ramb., according to the ♂ specimen so pin-labeled in Selys' collection (although without any Serville label), is very similar to *Ranssoneti* in having no color at base of the wings, grayish-white membranule and no hypertrigonals on any wings. The frons is not more prominent than in *brachialis* [Calv.=*contractum* Ramb.], the hamule is the most prominent part of the genitalia and has the external branch longer and very much thicker than the internal branch, the genital lobe is oblong, longer than wide; abdomen not contracted at 3. Arculus at the second antenodal, hind wings with the inner side of the triangle in prolongation of the arculus and sectors of the triangle separated at their origins, inner and outer ends of the pterostigma parallel.

Rambur's female type in Selys' collection has hypertrigonals on the front wings, base of the wings yellowish as far as the triangle; otherwise as in the male.

10. **Orthetrum Ransonneti** Brauer.

Lib. R. Brauer, Verhdl. z.-b. Gesell. Wien, xv, p. 1009, 1865, translated by Selys, Ann. Soc. Ent. Belg. xxxi, p. 20, 1887.—Sinai peninsula.

The following notes on the two types of Brauer in the K. K. Hofinuseum at Vienna were made by me in March, 1896.

The two types of *Ransonneti* Brauer differ from *brachialis* [Calv.=*contractum* Ramb.] in genitalia—not easily examined: genital lobe more prominent than other parts, hamule with external branch shorter than the internal branch and shorter than in *brachialis*; in the more prominent frons and clypeus, which, when viewed from above, have an antero-posterior length equal to one-half the greatest antero-posterior dimension of the eyes, whereas in *brachialis* the frons is one-third of this dimension of the eyes; paler reticulation, especially of costa and antenodals; the more trapezoidal form of the pterostigma inasmuch as the inner end is more nearly at right angles to the costa than the outer end, whereas in *brachialis* the two ends are nearly parallel; pterostigma paler, yellowish; no color at the base of the hind wings, membranule grayish-white, wings more pointed at apex, no hypertrigonals on any wings, arculus of all wings between the first and second antenodals, submedian cross-vein on the front wings nearer than the first antenodal, inner side of the triangle of the hind wings a little nearer the base than is the arculus; abdomen less contracted at 3; third tibiae with 9 spines on either side. The two types have the body pruinose.

11. **Orthetrum leoninum** Karsch.

O. l. Karsch, Ent. Nach. xvii, p. 59, 1891.—Sierra Leone.

Two nominal species of *Orthetrum*, *brevistylum* Kirby, Proc. Zool. Soc. Lond. 1896, p. 521, and *lorti* Kirby, *l. c.* p. 522, each based on a single individual from Somaliland, present, as pointed out by their describer, differences of generic value. Whether these differences will prove constant remains to be determined by larger series.

Libellula Marchali Rambur, from Mauritius, placed in *Orthetrum* in Mr. Kirby's Catalogue of Odonata, p. 36, does not belong to this genus, according to my notes on the two type males, one lacking the head, the other lacking the abdomen, labeled "Maurice", at Oxford. So also the *Orthetrum laterale* of Kirby's Catalogue *l. c.*, is a *Trithemis*, as pointed out on page 65, *ante*.

Besides the species here treated of, the following *Orthetra* occur in Africa: *cancellatum* L., *Ramburii* Selys and *nitidinerve* Selys along the Mediterranean coast; *sabina* var. *africana* Selys from the Cameroons, and *annulatum* Beauvois, of Owara, etc. To the knowledge of these and of the species just described by Mr. Kirby in the Annals and Magazine of Natural History for September, 1898, I can add nothing.

CORRECTIONS AND ADDITION.

Page 32, under (f) King's collection, change *Libellula* 23. *analis* to 22. *Tillarga*.

Page 35, last line of text and first line of footnote, change * to †.

Page 40. No. 13 *Agrion hastulatum*. Add: De Selys (Bull. Acad. Belg.—2—xli, p. 273, 1876) refers "*Agrion hastulatum*, Burm., no. 13 (Pars: l'exemp. du Cap.)" to *Ischnura senegalensis* Rambur.

INDEX.

- Abbottii 96, 100.
 Aenea 57.
 Æschna 52-56.
 Africana 102.
 Agrion 36-46.
 Albicincta 58.
 Albifrons 68.
 Amalia 37.
 Amazili 56.
 Americana 47.
 Analis 69.
 Anceps 100.
 Angolense 44.
 Annulatus 52.
 Annulatum 102.
 Apicalis 48.
 Arteriosa 67.
 Auripennis 48, 49, 93.
 Aurora 89, pl. I, f. 8.
 Azurea 54.
 Azureum 96, 101.
 Barbara 98, 99.
 Barbarum 46.
 Basalis 70, 93.
 Beauvois' types 98.
 Berenice 63.
 Bifasciata 93.
 Brachiale 95, 96, 97.
 Bremii 101.
 Brevistylum 102.
 Brightwelli 48.
 Burmeister, Biographies of,
 28 footnote; handwriting 30.
 Caffra 79, 96, 99.
 Caffrum 42, pl. I, f. 2, 3.
 Caja 48.
 Calopteryx 47-51.
 Cambridge, Types at, 33.
 Campanulata 52.
 Cancellata 92, 102.
 Capensis 96.
 Carolina 70.
 Castanea 73, pl. I, f. 5.
 Chinensis 49, 70.
 Chloridum 44.
 Chrysophthalma 54.
 Chrysostigma 85, 96, 98, pl.
 I, f. 11.
 Cingulatum 45, pl. I, f. 1.
 Cinnamomea 57.
 Clathrata 101.
 Clavata 51.
 Coarctata 96, 97.
 Cœrulescens 92.
 Coluberculus 54.
 Connata 77.
 Conspicua 45.
 Conspurcata 92.
 Contaminata 91.
 Contractum 82, 95, 96, 97.
 Costalis 53, 94.
 Croceum 37.
 Cyanea 54.
 Cynosura 58.
 Dasythemis 59.
 Decorata 51.
 Denticolle 38, pl. I, f. 13, 14.
 Depressa 92.
 Diastatomma 51-52.
 Dimidiata 47, 50, 71.
 Discolor 38, 79.
 Domitia 75.
 Dorsale 37.
 Dorsalis 56.
 Drège's collection 29, 32.
 Elegans 39.
 Ephippigera 55.
 Eponina 70.
 Epophthalmia 56-58.
 Equestris 77.
 Erythræa 88.
 Eustalacta 57.
 Exstriata 39.
 Fallax 77.
 Farinosum 96, 101.
 Fasciata 71.
 Fasciatum 44.
 Fasciolata 99.
 Fastigiata 64.
 Fenestrata 47.
 Ferrugaria 91.
 Ferruginea 88.
 Fervida 73.
 Flaveola 68.
 Flavescens 69.
 Flavipes 52.
 Flavo-maculata 57.
 Fluctuans 71.
 Forcipata 52.
 Forcipula 46.
 Frontalis 82.
 Fulva 92.
 Fulvia 70.
 Fumipenne 38.
 Furcatum 40.
 Fusca 45.
 Gabonense 41.
 Germar's collection 29, 31, 34.
 Gigantea 52.
 Glabrum 41.
 Glaucum 40.
 Gracilis 53, 58, 94.
 Grandis 53.
 Guttata 54.
 Hæmatina 65.
 Hæmatodes 62.
 Hæmatogastra 82.
 Halle, Types at, 30.
 Hamata 52.
 Hastulatum 40, 102.
 Hebe 48.
 Hemichlora 61.
 Heterostictum 40.
 Histrio 63.
 Hoffmannsegg's coll. 29, 32.
 Holosericea 49.
 Imbuta 64.
 Imperator 54.
 Indica 70.
 Interruptum 40.
 Iridipennis 49.
 Isosceles 54.
 Jaspidea 55.
 Juncea 54.
 Junia 56.
 Justina 73.
 King's collection 29, 32.
 Lacteam 44.
 Lateralis 58, 64, 102.
 Leoninum 96, 102.
 Leptura 87.
 Leucosticta 63.
 Libellula 58-93.
 Linearis 37.
 Lineata 47.
 Lineolata 92.
 Liriopa 60.
 Longicaudum 45.
 Longipennis 66.
 Lorti 102.
 Lucia 92.
 Lucretia 36, 37, 94.
 Luctuosa 49, 93.
 Lunulata 52.
 Lyteipennis 53, 94.
 Lydia 93.
 Macrurum 37, 94.
 Maculata 47, 49, 50, 51.
 Marchali 102.
 Marginata 92.
 Metallica 57.
 Minium 44.
 Mixta 54.
 Murcia 70.
 Najas 44.
 Nigra 69.
 Nitudinerve 102.
 Obscura 71.
 Obsoleta 81.
 Ochracea 71.
 Ornata 61.
 Orthetra, African 95-102.
 Oxford, Rambur's types at,
 97 footnote.
 Papuensis 56.
 Parallelo gramma 51.
 Parthenias 50.
 Pectoralis 69.
 Pedemontana 68.
 Pennipes 44.

Phallatum 45.	Sanguinolenta 90.	Trinacria 96, 101.
Phillipsi 101.	Saucium 38, 39.	Tripartita 78.
Phyllis 70.	Scoticum 69.	Trivirgata 68.
Plagiatum 46, pl. I, f. 4.	Semiaquea 88.	Truncatum 99.
Plebeja 78.	Semifasciata 93.	Tuberculatum 39.
Pleurosticta 61.	Semivitrea 92.	Tullia 37, 77.
Polysticta 81.	Septentrionalis 54.	Types not found 95.
Pratense 54.	Serpentina 52.	Umbrata 77, 78.
Pruinosa 88.	Sexmaculata 92.	Unimaculata 77.
Pruinosum 41.	Sommer's coll. 29, 31, 34, 35.	
Puella 40.	94.	
Pulchella 61, 93.	Splendens 50.	Variegata 70.
Pulchellum 40.	Sponsa 46.	Venosa 58, pl. I, f. 7.
Pulla 73, 75, pl. I, f. 10.	Stemmalis 84, 95, 97, pl. I, f. 12.	Vernalis 54, 94.
Pullata 71.	Stictica 66, pl. I, f. 6.	Verticalis 38.
Pumilio 39.	Subfasciata 78.	Vesiculosa 82.
	Subfasciolata 99.	Vienna, Types at, 34, 94.
Quadriguttata 52, 94.		Vinosa 52.
Quadrinaculata 93.	Terminalis 69.	Virgatum 46, pl. I, f. 9.
	Tessellata 62.	Virgo 50.
Ramburii 102.	Tessellatum 44.	Vittata 56.
Rambur's types 97.	Testacea 89.	Vulgata 68.
Ransonniet 96, 102.	Thorey's collection 32.	Vulgatissimus 52.
Reticulata 53, 94.	Tillarga 69.	
Rufescens 54.	Titia 47.	Winthem's coll. 29, 32, 33, 35.
Rufinervis 67.	Transversa 57.	Wrightii 85, 95, 97.
Ruralis 78.	Tricolor 48.	
	Tricolora 51.	Zimmermann's collection 32.
Sabina 82, 87, 96, 102.	Trimaculata 93.	Zonata 91.
Sanguinea 87.		

EXPLANATION OF PLATE I.

- Fig. 1. Apex of abdomen and terminal appendages of *Agrion* [*Lestes*] *cingulatum* ♂, viewed obliquely from above, left superior appendage omitted. X 23.
- Fig. 2. The same of *Agrion* [*Pseudagrion*] *caffrum* ♂, dorsal view. X 25.
- Fig. 3. The same of *A. caffrum* ♂, profile view, right side. X 25.
- Fig. 4. The same of *Agrion* [*Lestes*] *plagiatum* ♂, dorsal view, left superior appendage omitted. X 22.
- Fig. 5. Genitalia of second abdominal segment of *Libellula* [*Sympetrum*?] *castanea* ♂, inverted, profile view, left side. X 15.
- Fig. 6. The same of *Libellula* [*Trithemis*] *stictica* ♂, *ibid.* X 15.
- Fig. 7. Apex of the abdomen of *Libellula* [*Dasythemis*] *venosa* ♀, profile view, right side. X 8.
- Fig. 8. Genitalia of second abdominal segment of *Libellula* [*Trithemis*] *aurora* ♂, inverted, profile view, right side. X 15. The dotted line shows the outline of the penis.
- Fig. 9. Apex of the abdomen and terminal appendages of *Agrion* [*Lestes*] *virgatum* ♂, dorsal view. X 21.
- Fig. 10. Genitalia of second abdominal segment of *Libellula* [*Trithemis*] *pulla* ♂, inverted, profile view, left side. X 25.
- Fig. 11. The same of *Lib.* [*Orthetrum*] *chrysostigma* ♂, *ibid.*, right side. X 20.
- Fig. 12. The same of *Lib.* [*Orthetrum*] *stemmalis* ♂, *ibid.*, right side. X 20.
- Figs. 13, 14. Dorsal and profile (left side) views of prothorax and anterior part of mesothorax of *Agrion* [*Ischnura*] *denticolle* ♀. X 10. Shaded parts show dark-unshaded parts light-colored areas of the insect. *as* ante-humeral stripe, *hm* hind margin of head, *hs* humeral suture, *l* lamina concealing the mesostigma, *lpt* lateral tooth of prothorax, *mc* mid-dorsal carina, *mpt* median dorsal tooth of prothorax.

In other figures: *al* anterior lamina, *eh* external hamular branch, *gl* genital lobe, *ih* internal hamular branch, *p* penis, *rp* vesicle of the penis, *inf. app.* posterior appendages.

Figs. 1, 4, 6, 9, 10, 13, 14 were enlarged by camera lucida from freehand drawings of the types at Halle; 2, 3, 11, 12 are camera drawings from the types at Cambridge; 5, 7, 8 are freehand drawings from types at Cambridge.

